



INTERNATIONAL SOCIETY OF SUGAR CANE TECHNOLOGISTS

**Reports and Abstracts of the Proceedings
of the XXX Congress**

31 August – 8 September 2019

Tucumán, Argentina

Edited by

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Growing Energy The next page

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Welcome to the XXX ISSCT Congress

Bienvenidos a Argentina, colegas y amigos – Welcome to Argentina, colleagues and friends.

As the Congress Chairman, I am honored and delighted to welcome you to the XXX International Society of Sugar Cane Technologists' (ISSCT) Congress 2019, which is being hosted by the Sociedad Argentina de Técnicos de la Caña de Azúcar in Tucumán, the centre of the Argentine sugar industry.



We have been busy organising this Congress, the first to be held in Argentina, a country where sugar cane has been part of traditional production for almost three centuries and shapes the identity of the Province of Tucumán, the home of Argentine independence.

The Congress will provide you, the delegates and suppliers from over 70 countries, with the opportunity to exchange and share knowledge and technology of the different sectors of our industry, ranging from farmers, to processing factories, to the consumers, themselves. Take a closer look at the latest eco-friendly technology available in the industry for development of a sustainable production system and what alternative products can be produced from this, the wonder crop.

Pre- and the post-Congress tours will give you the opportunity to experience more of the stunning productive and tourist areas northwestern Argentina. I hope that you can take your time and explore further the great diversity of scenery and people here in Argentina.

We wish all delegates a warm and fruitful stay. Our facilities in the grounds of an old sugar mill should allow a comfortable Congress. You and your accompanying partners will be kindly welcome by all Argentine people.

Enjoy the Congress and make the most of your time in Argentina. Take away new friendships and new knowledge of sugar cane and its production and uses.

Jorge Scandaliaris
Chairman
XXX ISSCT Congress Organizing Committee

Opening address to the XXX ISSCT Congress



Giving value to ethanol as a clean and efficient option of energy for future mobility

Dr Plinio Mario Nastari

Most of biomass ethanol produced in the world uses corn or sugarcane as feedstocks. Because it has a high anti-knocking index (AKI), measured as 116 in the simple average of methods research and motor, ethanol is an efficient blend component to gasoline in order to provide high octane rating, and to substitute aromatic components that are considered a risk to health and the environment. More than that, ethanol has a high hydrogen content, is easy to produce, store and distribute, and does not require investments in new or special distribution systems to enable its use. It is drop-in at the distribution system when used as a blend component to gasoline and can use a similar system when used as a sole fuel.

There is little doubt that the future of mobility will be increasingly reliant on more efficient motorizations, and as much as possible with reduced carbon emissions. One of the ways of reducing consumption of energy used in transportation is the introduction of electrification, but this is not the only way. There are still large opportunities to reduce energy consumption, measured in MJ per km, with the optimization of internal combustion engines (ICEs), as well as the introduction of intermediate solutions such as hybrid vehicles, which are considered to be electric as well. When the origin-to-wheel concept is utilized, instead of tank-to-wheel, motorizations using ethanol produce lower greenhouse gas emissions than conventional gasoline cars using ICEs, hybrid vehicles and even electric battery vehicles, considering the source of electricity generated on average in Europe and the United States. Because biomass ethanol as a very clean carbon footprint, motorizations using ethanol, through ICEs, hybrid or fuel cell vehicles can provide an accessible solution to allow both low energy consumption, in MJ per km, as well as low GHG emissions, in grams of CO₂ equivalent per km.

Given a general objective of increased energy and environmental efficiency, the future of mobility should be determined by market forces choosing the most appropriate combination of energy source and motorization for each region and market.

Mobility based on high-density low-carbon footprint liquid fuels is a very economical and accessible solution to many countries. Production of biofuels is replicable and scalable, and can provide a rapid response for implementation of strategies aimed at contributing to reach scenarios of limited global

warming impact from greenhouse gas emissions, since they can use the existing distribution infrastructure. The International Energy Agency (IEA) and the International Renewable Energy Agency (IRENA) have called for ambitious targets for expansion of biofuels produced in a sustainable way, until 2030 and 2050. We are entering the Hydrogen Era - not hydrogen produced, stored and distributed in expensive high-pressure high-risk titanium tanks, but hydrogen contained in biofuels such as ethanol, biodiesel and biomethane.

The expansion of biofuels can provide a sensible route of diversification to many sugar economies, bringing more stability to sugar prices, reducing energy dependence, and providing longevity and sustainability for the use of traditional fuels in complement with biofuels.

Report of the Chairman of Council and Executive Committee 2016-2019

Introduction and overview

After a 10 Mt sugar surplus in 2017/2018, the world October/September production-consumption balance of sugar is expected to be neutral in 2018/2019 and in deficit in 2019/2020. During recent years, sugar crop productivity has fallen mostly because of detrimental weather around the globe. After a 10-year low, sugar prices had slightly improved in 2018 but remained unattractive to stimulate production in exporting countries. From 19.25 cents/pound in December 2016, the value of reference for raw sugar on the free market (Agreement N° 11, NYBOT) dropped to 11.54 cents/pound in May 2019, which is a 40% reduction! This economic pressure has a huge impact on an organization like ISSCT and the events it organizes, as well as on members' ability to attend these events. The budgets of research organizations and sugar companies have reduced, although we live in a time when the need for sugarcane expertise has never been greater. Our well-being is threatened by climate change, pollution, and overuse of resources. In this changing landscape, ISSCT is a society whose influence reaches across the globe and across the sugarcane community. As a society, we are in a unique position to be able to bring together actors across academia, industry, government, private and public sectors. Future development and long-term viability of our sugarcane community relies on the engagement of our members to share their views and their needs and communicate to leadership.

Executive Committee

The 2016-2019 Executive Committee (ExCo) met for the first time at the conclusion of the ISSCT XXIX Congress in Chiang Mai, Thailand (8 December 2016). Continuing members William Burnquist, Raul Castillo, Robert Gilbert, Philippe Rott, and Nicolas Gil Zapata were joined by newly elected members Sanjay Awasthi, Frikkie Botha, Juan Carlos Mirande, Salem Saumtally, and Sopon Uraichuen. Retiring members Chair Tim Murray, Vinay Kumar Gupta, Freddie Martin, Raul Reissner and Jorge Scandalariis were also present, as well as Jean Claude Autrey (General Secretary) and Peter Alsopp (Editor). Retiring members were thanked for their valuable service to the ExCo and their contribution to progress and wellbeing of ISSCT.

I was honored to be elected Chair of the ExCo and Council for the 2016-2019 period. Raul Castillo was elected vice-Chair and Robert Gilbert was elected Chair of the Technical Program Committee (TPC). Jean Claude Autrey and Peter Alsopp remained in the positions of General Secretary and Editor, respectively.

Mid-Term Meeting (MTM) of the Executive Committee and the Technical Programme Committee

The Mid-Term Meeting (MTM) is the main activity of the ExCo during the inter-congress period. The MTM in preparation of the ISSCT XXX Congress was held in Tucumán, Argentina, from 23 to 27 April 2018. It was hosted by the Sociedad Argentina de Técnicos de la Caña de Azúcar (SATCA) and we would like to thank them for the arrangements and their availability. This meeting was very well organized by the local congress organizing committee (COC), for the benefit of all.

In contrast to previous congresses, the Congress facilities were not available for viewing during the MTM. ExCo and TPC members were shown the location of the future venue of the congress, which is a former sugarcane mill that was planned to be remodeled into meeting facilities, including the XXX congress. A video and maps of the forthcoming congress site were provided and the communication with COC and the functions' facilitator were excellent. Details of pre- and post-congress tours were also given by COC. The pre-congress tour will be held in the Tucuman area and the ExCo and TPC members had the opportunity to visit post-conference locations in the Jujuy/Salta region. All the facilities and locations were found very attractive and will contribute to an enjoyable and fruitful XXX congress in September 2019.

The report of the General Secretary and the minutes of the MTM will contain all details pertaining to these meetings but I want to highlight here three important issues for our Society.

Survey on Members' satisfaction/expectations

A survey was undertaken from 2-19 March 2018 among ISSCT members to request their views on how to improve ISSCT, and the results of this survey have been posted on the ISSCT website. Among others, members were very favorable to workshops organized under the auspices of ISSCT between congresses. These events will continue to be organized but new guidelines for workshops will include innovation to favor more interactions and exchange among members and less formal presentations such as those given at congress ("Workshops should not be mini-congresses"). Furthermore, time allocated to oral

presentations at congress will be reduced as requested by a large majority of members. Other improvements, such as a rapid oral presentation of posters at Congress, will also be implemented by the TPC.

Secretariat duration and location

At Congress XXIX in Thailand, and as per the terms of the constitution, Council instructed the ExCo to request bids for hosting the ISSCT secretariat for the period 2019-2025. By the set deadline of 31 March 2018, I had received only one bid. This bid (23-page document + 13 annexes) was unsealed at MTM and it was from the Director of the Mauritius Sugarcane Industry Research Institute (MSIRI). The director of MSIRI (Dr Salem Saumtally) gave an oral presentation of the bid and the ExCo examined the written document in detail. The ExCo considered the MSIRI bid as an excellent proposal for continuation and improvement of the secretariat in Mauritius. In particular, the ExCo suggested addition to the secretariat of an IT person to help the secretariat to improve the website and to develop social media communication tools (Facebook, Twitter, Instagram, etc.) at ISSCT.

New ISSCT award

The ExCo and the TPC are strongly committed to support young scientists, particularly from developing countries, to perform excellent research in sugarcane and to attend the workshops and congresses organized by ISSCT. Several members of our society have already received early-career awards, and the ExCo decided at the 2018 MTM to confer also a mid-career award. This award will be restricted to presenters of papers at congress and shall be used to attend the next congress.

Workshops

All workshops occurred between the mid-term meeting and the end of 2018, with the exception of the management workshop that will be held during the ISSCT XXX Congress. These workshops were well attended, confirming the interest of the Society's members for this type of scientific gathering to share information and develop collaborations. Several of these workshops were, however, still organized like mini-congresses and new formats that include more time for discussion and interactions on specific topics must be investigated (for example: participation of outside experts in round tables at section workshops to focus on particular local or international issues/problems).

Finances, Tax situation and Legal status

The Financial situation of ISSCT is healthy. The financial statements for the Society for the period 1 July 2013 to 31 December 2016 have been prepared and audited. They have been circulated to the ISSCT Chair and to Chair (Raul Castillo) and Members (Sanjay Awasthi and Sapon Uraichuen) of the Finance Committee. The Estimates for the inter-congress period (January 2017-December 2019), which have been approved at the ISSCT XXIX Congress, were discussed at the MTM. A Statement of Income and Expenditure for the period January 2017 to December 2018 (24 months) has been circulated and reviewed by the Finance Committee in spring 2019. Whenever necessary, the Secretariat has provided explanations to queries raised by the Finance Committee. The audited account will be prepared by the Secretary for the period of up to three months before Congress (end of May 2019) and examined by the ExCo at congress in September 2019.

The Tax situation and Legal status of ISSCT have been major concerns of the former ExCo. The tax issue has been settled before the ISSCT XXX Congress as the General Secretary verified with the Mauritius Revenue Authority that ISSCT secretariat had a Tax Account Number and that ISSCT was not liable to tax. The legal status of ISSCT still needs to be resolved and was put on hold until identification of the 2019-2022 location of the secretariat. With allocation of the ISSCT secretariat to MSIRI, the location for this registration will be in Mauritius. At this stage, registration of ISSCT as an Association should be less complex and less expensive than registration as a Company.

General comments and Future challenges

ISSCT is almost 100 years old (first congress held in 1924!) which reflects the good organization and dynamism of our society, but we need to continue improving ISSCT and adapting it to our constantly changing and demanding world. Organizing the XXX Congress of ISSCT has been a tremendous and exciting challenge as it will be the first congress to occur in Argentina and in a former sugarcane mill that was specifically renovated for that purpose.

At the first ISSCT congress, participants were most likely only talking about producing sugar and, almost 100 years later, sugarcane is the source of about three-quarters of the world's sugar, and I believe members of ISSCT have a great part in this success story. Nevertheless, nowadays sugarcane is not only used for sugar solely. We all know about the success story of sugarcane as a source of biofuel in Brazil, and bioethanol production in numerous countries around the world. Paper and other bagasse-based products are produced in several countries. Furthermore, sugarcane has not unraveled all its secrets: potential exists for sugarcane as jet fuel, alternative sugars, value-added biomaterials, etc.

From a technological point of view, great progress has been made since the last congress in Thailand. Several research groups have published the genome of sugarcane, which offers our community new knowledge to better understand the interactions of sugarcane with its environment and to produce improved cultivars. Genome editing is knocking at sugarcane's door. The use for commercial production of the first genetically modified sugarcane (Bt Sugarcane), developed by the Centro de Tecnologia Canavieira (CTC), has been approved in Brazil. Artificial seed (coated embryos) has also been developed and this could revolutionize traditional sugarcane planting systems.

Congresses and workshops are great opportunities to meet old friends and to make new friends to assure continuation. I wish all members a wonderful congress and stay in Argentina, and I look forward to reading the new pages of ISSCT history!

Acknowledgments

I thank all members who contributed to the well-being of the Society during the past three years. The Society would not be running smoothly without the contribution of the members of ExCo and TCP that I thank for their support and contribution during the inter-congress period. My thanks also go to the General Secretary, Dr Jean Claude Autrey, who continued to be a very efficient and key person in assuring administrative maintenance and health of ISSCT; and to Dr Peter Allsopp for the time spent and his efforts in editing congress papers, and without whom we would not have the 2019 proceedings. Finally, this report would not have seen the light without the support of my wife Claudia and my family. Merci pour tout!

Philippe Rott
Chair, ISSCT Council and Executive Committee
30 June 2019

Report of the General Secretary 2016-2019

Introduction

The sugar cane industry has been living through challenging times during 2016-2019. The challenges were numerous and varied. First and foremost was the decrease in price of sugar on the world market that plummeted in August 2018 to 10.75 US cent per lb, the lowest since 2008. This decrease was induced by a sudden increase in production of some 20 Mt, which, even with larger consumption, led to a net surplus of some 10 Mt. Prices remained low in 2018-19 and, because of available stocks, are not expected to increase before 2020-21. Other challenges included societal issues such as climate change, global warming, greenhouse gas emissions, pollution and perceived health issues associated with sugar consumption such as obesity, although many of these issues are still contentious.

The sugar cane industry has responded well to these societal challenges. In the quest to boost competitiveness and adapt to changing market environments, the industry has seen diversification in and outside sugar as an important process that would determine future profitability. Sugar cane is a crop with bright prospects given its biomass, which could not only produce sugar for human food but also bioenergy in form of electricity and ethanol from a clean renewable source. There is a wealth of opportunities to take advantage of for adding value, especially with advances in molecular biology technologies and in the development of the bio-refinery concept. In spite of the present situation, stakeholders have every reason to be optimistic about the medium- to long-term future of the sugar cane industry.

This report covers the period from the end of the ISSCT XXIX Congress in Thailand on 8 December 2016 to 30 June 2019, i.e. some 30 months. It covers the activities of the Secretariat, and the interaction with the Congress Organising Committee (COC) of the ISSCT XXX Congress, as well as other components such as Membership, Finance, Constitution, Communication, Workshops and Strategic Initiatives.

The Mid-Term Meeting (MTM) of the Executive Committee was held in April 2018 in Tucumán, Argentina and some of its deliberations and decisions are included in this report.

Secretariat

The Secretariat has retained its location since 1996 in Quatre Bornes some 6 km from the headquarters of the Mauritius Sugarcane Industry Research Institute (MSIRI). The premises, which were renovated in 2015-2016, were further improved with the installation of air conditioners at the expense of the owner. The rent remained at USD 280 per month, as decided at the last Congress. In terms of equipment there were no major breakdowns except for a paper shredder that had to be replaced. One new item of equipment, an iPad Pro, was acquired in April 2018. There was no change in staff.

Hosting of Secretariat

The Secretariat had been hosted by the MSIRI since its creation in 1996 with the renewal of the Memorandum of Understanding at each subsequent Congress. Further to the decision of Council at its last meeting at the XXIX Congress in Thailand, bids were solicited from Affiliated and Institutional members as per ISSCT Constitution to host the Secretariat. At the deadline of 31 March 2018, only one bid from the MSIRI had been received by the Chair of Council and Executive Committee.

The detailed bid was examined at the MTM. The Introductory part dealt with six aspects:

- Mauritius and sugar cane: How sugar cane has considerably influenced the development and socio-economic advancement of Mauritius.
- Sugar cane research in Mauritius since 1893.
- The creation and evolution of the MSIRI.
- The historical evolution of ISSCT since 1924, the creation of the Permanent Secretariat in 1996 and its hosting by MSIRI (out of two institutions that had shown interest).
- The performance of the Secretariat, its Permanent and General Secretary through extracts of Reports, amongst others from Dr. Vic Mason, Dr. Freddy Martin and Mr. Tim Murray, all three having chaired the ISSCT Council and Executive Committee.

- The reasons why Mauritius should be considered for hosting the Secretariat through the active participation and contributions of MSIRI scientists and Mauritian technologists of repute to ISSCT. The high number of Honorary Life Members from Mauritius is highlighted.

The second part described the proposed management of the Secretariat from 2019 to 2025 (two terms) as requested for bid documents, and comprised the following:

- Infrastructure and facilities: the Secretariat would be moved from its present location 5 km from the MSIRI to a building in the shape of a sugar crystal on the MSIRI premises. The area would be increased from 60 m² to 132 m². No rental fees for this building would be charged to ISSCT (rent of current Secretariat location amounts USD 10,500 for three years). The new facility would contribute to higher visibility of the Secretariat on the MSIRI main drive and would enhance its status.
- The budget and cost of the Secretariat will be reduced from USD 39,450 for 2016-2019 to USD 25,000 for 2019-2022. The present staff of four consisting of the General Secretary, Confidential Secretary, Clerk and Office Attendant would be reduced.
- MSIRI would contribute USD 25,000 for running the Secretariat during each inter-congress period and would provide state-of-the-art technologies for its functioning. Social media would also be used.
- To cater for cultural diversity in addition to the ISSCT official languages (English, French and Spanish), documents would also be issued in Portuguese whenever necessary. Two world-renowned technologists (an ISSCT Honorary Life Member from Cuba and a Commissioner from Brazil) would provide support in Spanish and Portuguese. The other two languages would be handled by the Secretariat as members from Mauritius are bilingual in English and French.
- For the Position of General Secretary, the MSIRI has proposed Dr. Louis Jean Claude Autrey who has served the ISSCT in various capacities since 1983 (Chair of ISSCT Council and Executive Committee from 2001 to 2005 and General Secretary from 2007 to date).
- The MSIRI Bid was supported by the Government of the Republic of Mauritius through a letter from the Acting Minister of Agro-Industry and Food Security. Two previous Chairs of ISSCT Council and Executive Committee (Mr. Brian Egan and Dr. Victor Mason) had provided letters of support for MSIRI to continue to host the ISSCT Secretariat.

In conclusion, MSIRI would provide all needed support so that the Secretariat can continue to fulfil its present mandate. MSIRI has expressed confidence that the Secretariat with Dr. Jean Claude Autrey would provide the best possible service to the Members of ISSCT. Hosting of the Secretariat by MSIRI would ensure stability and continuity to what is at the heart of ISSCT.

The Executive Committee unanimously considered the MSIRI bid as an excellent proposal for continuation and improvement of the secretariat in Mauritius. The Executive Committee suggested that in order to accompany the secretariat into the current modern area of social communication media, the secretariat should hire a young web-communication specialist to help improvement of visibility of ISSCT via a more attractive website, web based newsletter and other means such as Facebook, Twitter, Instagram, etc. This IT person could be hired using the resources available in the ISSCT account.

ISSCT Executive Committee made recommendation to Council as per agreed procedures for the hosting of the Secretariat by MSIRI. Council unanimously approved the recommendation of the Executive Committee.

Registration of ISSCT

Following discussions at MTM for the registration of ISSCT to provide it with a legal status, the Secretariat had discussions with the Registrar of Associations in Mauritius. While the ISSCT could satisfy most of the requirements to be registered as a friendly society, it could not meet the requirements of having its all of its office bearers be residents of Mauritius. The idea was dropped.

Contacts were made with the Registrar of Companies and the name of *International Society of Sugar Cane Technologists Ltd* was accepted. Further discussions are underway and the outcome will be reported at Congress.

Debt recovery

The only item under this section concerned the Congress Host Fee owed by STAB/COC of the XXVIII Congress. Further attempts were made at recovering this amount of USD 15,000. A proposal by STAB for a reduced amount was rejected by the Executive Committee. Council will have to consider this item during its deliberations at the XXX Congress and take a final decision

Finance

The Interim Accounts for January 2017 to June 2019 are being audited. The audited accounts will be presented to the Finance Committee before Congress and to the Executive Committee at Congress for scrutiny, before being submitted to Council for approval. As at 30 June 2019, Income amounted to USD 219,408, while the amount budgeted for the period to December 2019 was USD 388,700. As many technologists apply for membership or renewal of membership in the latest months of the inter-congress period, the Income is expected to increase, and this will be reflected in the accounts which will be closed on 31 December 2019.

Expenditure at 30 June 2019 amounted to USD 279,922. All lines of budget have been underspent except the one, Webpage and Database, for which a provision of USD 3,000 had been made. However, the sums spent for the Survey on Members' Expectations and Satisfaction USD 1,162 and for the Report on the Survey USD 3496.59, a total of USD 4658.59, have been put under Webpage and Database. Taking into account other expenses under that budget line, the total amount spent was USD 6269, which represented an over expenditure of USD 3269.

The Online Payment System was used by practically all members for settling their dues. The only ones not taking this opportunity were those who did not have access to credit card. Except in rare cases when there is a shortfall of a few dollars dues to bank charges, all the dues have been recovered.

Constitution – Policy and Procedures

Changes to the Constitution

At the MTM discussions centered on the duration of the tenure of the Chair of Council and Executive Committee, which is not specified in the Constitution. The Chair was of opinion that the tenure should be for one term, to which Executive Committee was agreeable. Concerning the hosting of the Secretariat the minimum period would be six instead of three years. Any organisation willing to host the Secretariat would have to notify the Executive Committee at least one and a half years prior to the Congress preceding the end of the running mandate of the acting Secretariat. The Constitution and Resolutions Committee met at the MTM and developed the proper wordings for the amendments which were as follows:

The Constitution and Resolution Committee proposed the following changes to the Constitution:

1. Insert a new 3.2 into Clause 3 (page 6): 3.2. Any member elected as Chair can serve only one term over the period of one Congress.
2. Change Clause 2.1 to read (page 12): '...for a minimum period of 6 years.'
3. Change Clause 2.3 to read (page 12): 'notify the Executive at least one and a half year prior to the next Congress.'
4. Leave the term of appointment of the General Secretary Clause 3 as is (page 13) 'a period of at least 3 years, renewable'.

These changes were adopted by the Executive Committee and to become effective will have to be considered by Council at its meeting at the XXX Congress.

Changes to Policy and Procedures

The only change proposed to Policy and Procedures concerned the Mission Statement, which was amended by removing the words "economic and" - it reads as follows: *The Society is committed to the sustainable advancement of the sugar cane industries of the world and associated communities, through promoting innovative research, development and the adoption of technology, and by sharing the knowledge among its members for their professional development.*

The Secretariat subsequently amended the Mission Statement in the Policy and Procedures Manual and on the website. A suggestion of having a Vision Statement was dropped.

Membership

All members, whether Individual, Affiliated, Associate, Institutional and Corporate, registered for the XXVII Congress in Mexico, XXVIII Congress in Brazil and the XXIX Congress in Thailand were contacted for renewal of their membership.

Membership for the last Congress stood at 1166 and included 1042 Individuals, 75 Corporate members, 22 Affiliated Members, 21 Honorary Life Members and 6 Institutional Members.

Category	2013-2016	2016-2019 as at 30 June 2019
Honorary	21	22
Individual	1042	615
Affiliated	22	12
Associate	-	-
Institutional	6	5
Corporate	75	56
TOTAL	1166	710

As at 30 June 2019, there were 710 members, including 615 Individual, 22 Honorary, 12 Affiliated, 56 Corporate and 5 Institutional. This number is expected to increase, as there are usually many applications for membership or renewal of membership in the last months preceding the Congress or at Congress. However, given the financial situation of the various sugar cane industries, it is expected that the number of members would be lower during the 2016-2019 period than in the previous ones.

Spheres of activity indicated by Individual members and 56 Corporate Representatives as at 30 June 2019 for the XXX Congress, which were not limited to one area: 238 nominated Agronomy; 217 Biology, 217 Factory, 124 Co-Products and 193 for other areas including Management, Marketing, Economics, Information Technology and Consultancy Services.

The breakdown per country of members for the period 2013-2016 (60 countries) and for the period 2016-2019 (58 countries) as at 30 June 2019 is:

	2016	2019		2016	2019		2016	2019		2016	2019
Argentina	21	37	Dominican Republic	-	2	Malaysia	2	-	Sri Lanka	-	1
Australia	67	41	Ecuador	13	4	Mauritius	67	23	Swaziland	7	2
Austria	-	1	El Salvador	1	1	Mexico	12	9	Sweden	3	3
Bahrain	1	-	Fiji	6	-	Morocco	-	1	Switzerland	2	1
Barbados	3	3	France	36	33	Mozambique	-	2	Taiwan	2	2
Belgium	5	7	Germany	24	12	Netherlands	5	1	Tanzania	2	2
Belize	1	-	Guadeloupe	1	4	Nicaragua	-	1	Thailand	174	36
Brazil	48	51	Guatemala	8	9	Nigeria	5	5	Uganda	2	1
Cambodia	2	-	Hawaii, USA	1	-	Pakistan	37	27	Uk	16	10
Cameroon	3	1	India	114	75	Panama	-	1	Ukraine	-	1
Canada	1	-	Indonesia	75	4	Paraguay	-	6	Uruguay	1	-
Central African Republic	-	1	Iran	41	-	Peru	3	1	USA	60	72
China	38	19	Israel	3	3	Philippines	17	4	Venezuela	-	-
Colombia	23	43	Italy	1	1	Reunion	22	40	Vietnam	6	2
Congo	2	-	Ivory Coast	6	4	Senegal	3	4	Zambia	2	-
Costa Rica	1	1	Jamaica	1	1	Singapore	2	-	Zimbabwe	9	1
Croatia	-	1	Japan	35	43	South Africa	105	32			
Cuba	4	6	Kenya	4	3	Spain	-				
Denmark	2	1	Malawi	3	-	Sudan	5	-			

Honorary Life Membership

At the end of the inter-congress 2013-2016 there were 24 Honorary Life Members. With the death of Dr. Benjamin Leighton Legendre and Sh. Shivajirao G. Patil in 2017 and Denver Thomas Loupe in 2019, the number is 21 and nominations may be considered at the XXX Congress.

Website

The ISSCT Website was regularly updated for the convenience of the members. In the Publications section the proceedings of all 28 congresses held from 1924 to 2013 are available. These Proceedings are fully searchable by subject matter, authors'

names, titles of papers and posters, etc. The Proceedings of the XXIX Congress held in Thailand in December 2016 are available in the Members' Corner of the Website.

The Programmes and Abstracts of all presentations made at the Workshops were put on the website. However, as decided at the XXIX Congress the actual PowerPoint presentations were not included because the ISSCT was not willing to assume the responsibility for their contents. Participants at Workshops and Members were advised that they could contact directly those making presentations if they wanted to have these.

Concerning the Variety Notes Website, Dr. Philip Jackson Coordinator had indicated that it was active and was used over the last year. As intended, it had provided information to breeders and others about the major varieties and their characteristics in most sugar cane producing countries, as well contact information about institutes involved in variety improvement in most countries. Some occasional updates to data in some countries had been made during the three years. A push for updating across all countries was made during the ISSCT Germplasm and Breeding workshop in Japan in October 2018. Some additional features to the website had been proposed to provide more information of key interest to breeders, and were also discussed at the workshop. These included: (i) addition of ancestry data on major varieties via an underlying shared ancestry data table, which can be viewed on the website, and (ii) providing a repository of published and unpublished papers, reports and invited educational notes (by invited experts) on topics relevant to sugarcane breeding.

Workshops

All Workshops scheduled for the inter-congress period were held as indicated in the table below. They were judged as excellent based on the feedback from the participants who were satisfied with both their organisational and technological/scientific aspects.

Workshop	Location	Date	No. of Participants	Number of Countries Represented
Co-Products	Campinas, São Paulo, Brazil	21-24 August 2018	27	7
Pathology	Coimbatore, India	3-7 September 2018	56	11
Agricultural Engineering, and Agronomy & Extension	Réunion	23-28 September 2018	101	19
Engineering & Processing	Cali, Colombia	1-3 October 2018	70	18
Germplasm & Breeding/Molecular Biology	Okinawa, Japan	22-26 October 2018	113	18

Programmes and Abstracts of oral communications and posters of these Workshops may be accessed through the following links:

Co-Products Workshop: <http://www.issct.org/pdf/coprowrkaug18brazilabstracts.pdf>

Pathology Workshop: <http://www.issct.org/pdf/pathwrksept18indiabstracts.pdf>

Agronomy and Agricultural Engineering Workshops: <http://www.issct.org/pdf/agroagenwrkoct18reunionabstracts.pdf>

Factory Engineering and Processing Workshops: <http://www.issct.org/pdf/factwrkoct18colombiabstracts.pdf>

Germplasm & Breeding/Molecular Biology Workshops:

Programme:

<http://www.issct.org/pdf/programmegermbreedmolbiolwrkjanooct18.pdf>

Abstracts of Oral Communications and Posters:

Germplasm and Breeding: <http://www.issct.org/pdf/abstractsgermbreedwrkjanooct18.pdf>

Molecular Biology: <http://www.issct.org/pdf/abstractsmolbiolwrkjanooct18.pdf>

Entomology Workshop:

Programme and Abstracts of Oral Communications and Posters:

<http://www.issct.org/pdf/abstractsprogentowrkusadec18.pdf>

The Workshop of the Management Commission will be held during the XXX Congress in Tucuman in September 2019 and the Second Announcement has been uploaded on the ISSCT website at <http://www.issct.org/pdf/2ndAnnounceMangEng.pdf>

The number of participants at these workshops were 367 compared to 401 during the previous congress period. Some workshops attracted a lot of interest from the membership, especially: Agricultural Engineering, Agronomy & Extension and

Germplasm & Breeding/Molecular Biology. The danger of converting workshops into mini-congresses was highlighted at the MTM and TPC was advised to ensure that the initial spirit of workshops be adhered to, i.e. Workshops should be platforms for discussions and exchange of ideas.

Laureateship

The Executive Committee and TPC had decided at Congress in Thailand that the winner of the best paper across Workshops would attend the next workshop in his/her discipline. For the inter-congress 2013-2016 the winner was Dr. Cecilia Easdale from Argentina and she attended the Entomology Workshop held from 3-7 December 2018 in Florida, USA.

Executive Committee in consultation with TPC further decided that there would be a Mid-Career Award in the age bracket of 35 to 45 for the best paper at Congress. This entailed that the date of birth be requested by the Editor at the submission of all papers. The award would be attendance at the next congress and an amount of USD 3,500 would be budgeted for this item to cover air ticket, hotel accommodation and Early Bird registration fee. The winner was expected to pay for miscellaneous expenses associated with his/her participation.

The Early-Career Award would be for scientists less than 35 years old and selection would be for the best submissions across workshops as it was the case in the previous inter-congress period.

Administrative Matters

Strategic actions and initiatives

Survey on Members' Satisfaction/Expectations

With the objective to provide better service and to add more value to membership, the Executive Committee decided to carry out a Survey on Members' Satisfaction/Expectations. Such a survey had carried out twice previously (in 2001 and 2005). The questionnaire was sent to members on 2 March 2018 and the deadline fixed to 19 March 2019. At that date owing to the low response, an extension was granted to 28 March 2019. According to ISSCT records, in 1999-2001 there were 77 respondents with 73 valid responses while in 2005 there were 93 respondents.

The report submitted by BDO was considered by the Executive Committee at the MTM. It was agreed that the sample of 10% was representative of the membership based on similar activities for other institutions in and outside the sugar industry. Respondents were from 28 of the 64 member countries of ISSCT, which gave a relatively good geographical spread. Most of the respondents (60%) had more than 20 years of experience in the sugar industry and 46% had been ISSCT members for more than 10 years; 79% were Individual Members. A strong majority (89%) had attended a previous congress, 87% rated overall arrangements at the past congress as either excellent or very good. For Pre and Post Congress Tours 65% of respondents found them either excellent or very good. In 11 out of 12 areas describing congress scored above 50% in terms of either excellent or very good, the highest score (76%) was for the quality of Trade Exhibition and the quantity of participants. Concerning format of future congresses, a majority (45%) preferred that oral presentations be limited to 20 minutes. The areas of interest given by respondents were indeed very broad. Concerning Poster presentations, respondents were favourable with 64% wanting to have a five-minute Poster presentation in each Section. 50% had attended ISSCT workshops in the last three years and seven parameters related to workshops were rated excellent or very good by 70% of respondents while the highest rating was for overall arrangements (87%) and interaction with other technologists (80%).

In general, respondents were favourable to ISSCT continuing to hold workshops which they found important under many respects for their professional activities and progress.

Under Communication and Website, which was covered in seven components, the highest scores in order of ranking were as follows: Circulars from ISSCT (97%), in general (96%), Workshop Organisation and Participation (96%) and Congress Organisation and Participation (90%). Concerning frequency of the consultation of the ISSCT website, 47% of the members visited the website occasionally while 30% did so regularly or very frequently. However, 23% had never or only rarely consulted the website. A significant majority (80%) requested that ISSCT should send communication every three months.

The Secretariat was rated as excellent in communication with members. There was a series of some 62 suggestions for improving communication with members, but the general consensus was that communication at ISSCT was satisfactory. A significant majority (89%) expressed satisfaction with Congress Proceedings, while 96% were in favour of ISSCT continuing to publish papers in International Journals related to sugar cane. A high percentage (75%) was in favour of ISSCT having a scientific journal of its own.

Some 38 additional suggestions had been put forward by respondents to improve the ISSCT. Some of the points raised by respondents would be taken on board for the next congress after discussions with TPC. Executive Committee expressed its appreciation to BDO for the report especially that little time was available between the deadline for responses and the MTM.

The survey report was placed on the open area of the website and a synopsis in English and Spanish was also included. Some actions ensuing from the Survey had already been initiated for the XXX Congress.

International Sugar Cane Biomass Utilization Consortium (ISBUC)

Four Working Groups were established during the meeting in December 2015 in Mauritius at the ISSCT Co-Products Workshop:

1. Trash recovery, trash quantification, storage of biomass
2. Leader: Raoul Lionnet
3. Cane cleaning, Impact of trash on cane processing (extraction/process) Leader: Steve Davis – SMRI
4. High fibre cane Leader: Salem Saumtally – MSIRI
5. Conversion of biomass (impact on boilers/gasification) Leader: Manoel Regis Lima Verde Leal – CTBE

Reports have been produced by each Working Groups and would be presented at the next Congress and the groups would then be discontinued for lack of possibility to implement projects.

Broadening of ISSCT membership

During the 2016-2019 inter-congress period contacts were made with various African countries and actions by the Secretariat resulted in three new Affiliated Members:

- Association des Opérateurs de la Filière Production Sucre du Cameroun (FIPROSUCAM)
- Association des Producteurs Sucriers de Centrafrique (APSCA)
- Association Professionnelle Sucrière (APS) of Morocco

This represented a successful strategic move of ISSCT towards broadening its membership as since the previous inter-congress two new technologists' associations had joined ISSCT from Nigeria and Ivory Coast. With the decline of sugar cane in Barbados and the resignation of the Barbados Society of Technologists in Agriculture (BSTA), in order to have a representative from the Caribbean the Jamaican Association of Sugar Technologists (JAST) was approached to replace BSTA. Progress was made, but JAST has yet to join ISSCT.

Mid-Term Meeting (MTM)

The MTM was held in Tucumán from 23 to 28 April 2018 and comprised discussions on ISSCT business, preparations for the XXX Congress, visits to institutions and sugar factories in Tucumán as well as further north in Jujuy/Salta area. After looking into the affairs of the Society the Executive Committee and TPC discussed with COC the arrangements concerning the Congress *inter alia* registration of members, hotel accommodation, logistics, Convention Centre facilities, visa procedures, cost of attendance, editing of Proceedings, Trade Exhibition, Pre and Post Congress Tours, Social activities and Partners' Programme. All members of Executive Committee indicated that they will attend the XXX Congress and all Commissioners will be present as well as the Editor.

XXX Congress

The dates of the XXIX Congress originally scheduled for 23 to 27 June 2019 were moved to 31 August to 5 September 2019. The Congress would be held in San Miguel de Tucumán, Argentina according to the following schedule:

- Pre-Congress Tour: from 31 August to 1 September 2019 in Tucumán
- Congress: from 2 to 5 September 2019 in Tucumán
- Post-Congress Tour: from 6 to 8 September 2019 in Salta and Jujuy

The Venue is the Sociedad Rural de Tucumán (Tucuman Rural Association) situated 30 minutes from downtown of San Miguel de Tucumán. According to COC the venue will be equipped with all the infrastructures for the Congress including the Trade Exhibition. These were ascertained during the MTM when it was decided that Executive Committee and TPC would send representatives on site to ascertain that the preparations were on target. A visit was made in April 2019 and a second one was scheduled for August 2019.

Congress Newsletter No. 1 was issued in early December 2017 contained all information on the Congress and related activities. Subsequently, Congress Newsletters No. 2 and No. 3 were sent out to members and external publics in August 2018 and March 2019 respectively. Newsletter No. 4 is scheduled to be sent out before Congress.

In Memoriam

During the inter-congress period 2016-2019 the Society lost a few members. Among them were: Dr. Rodney Maud, Dr. Benjamin Leighton Legendre, Mr. Shivajirao G. Patil, Mr. Philip Gwyther Atherton, Mr. Stanley "John" Pearce, Dr. John Rhys Williams, Mr. Jacques Albert-Thenet, Mr. Mike Way, Dr. Erik Mirkov and Dr. Denver Thomas Loupe. All of them have had distinguished careers in the sugar industry and had served the ISSCT in various capacities. Dr. Legendre, Mr. Patil and Dr. Loupe were Honorary Life Members of ISSCT. Tributes have been paid to them and have been published on the ISSCT website. Expressions of sympathy have been sent to their families by the ISSCT Secretariat on behalf of ISSCT.

Acknowledgements

I express my sincere thanks and appreciation to the Chair of the Council and Executive Committee, Dr. Philippe Rott, the Chair of the TPC, Dr. Robert Gilbert, the Chair of the Finance Committee, Dr. Raul Castillo, the Editor, Dr. Peter Allsopp and the Director of MSIRI, Dr. Salem Sauntally for their trust and support which have greatly facilitated the running of the Secretariat and allowed it to fulfil its mission for the advancement of the Society and of its Members. To the staff of the Secretariat especially Mrs Vanina Barbier goes my gratitude for their commitment and unflinching assistance.

L. Jean Claude Autrey
General Secretary
15 July 2019

Report of the Chairman of the Technical Program Committee 2016-2019

Sugarcane industries and researchers face continual challenges. World prices wax and wane, public funding of our research institutions do likewise, and we face production stresses from an increasingly variable climate with greater threats from invasive pests and diseases. The ability to share our research results and form collaborative networks to solve these pressing issues via the common forum of the ISSCT Congress is absolutely crucial for the viability of our industries and our institutions. Thank you very much for attending the 2019 Congress in Tucumán. Please use this opportunity to broaden your horizons and garner diverse perspectives on the solutions to challenges we face in agriculture, biology, factory, co-products and management.

Congress Program

It is impossible to hold a successful and educational Congress without a broad distribution of well-edited papers from all ISSCT sections. Profound thanks are due to the ISSCT Editor, Dr Peter Allsopp, as well as the ISSCT Commissioners, Section Chairs and Reviewers for their hard work in reviewing the manuscripts, and to the ISSCT members who submitted papers in all our commissions.

We have 177 papers and 125 posters accepted for the 2019 Congress in Tucumán. In addition, we have three plenary sessions that examine: 1) a comparison of sugarcane versus sugar beet productivity, breeding and processing, 2) economic competitiveness of sugarcane production and 3) environmental sustainability of sugarcane production. These papers cover topics such as factors affecting sugarcane yield trends, competitiveness of sugarcane in an era of low prices, ideal factory designs, and soils management for improved profitability and environmental consequences of sugarcane production.

Workshops

Workshops held/scheduled from 2016-2019 were:

Section	Venue	Theme	Date
<i>Agricultural Commission</i>			
Agricultural Engineering	Réunion	Farming for the Future: Improving Productivity and Ecological Resilience in Sugarcane Production Systems	23-28 September, 2018
Agronomy			
<i>Biology Commission</i>			
Breeding/Germplasm	Japan	Improvement of Sugarcane for Stress Environments	22-26 October, 2018
Molecular Biology			
Entomology	USA	Solving Regional Arthropod Management Challenges in a Global World	3-7 December, 2018
Pathology	India	Challenges and Advances in Sugarcane Pathology	3-7 September, 2018
<i>Factory Commission</i>			
Engineering	Colombia	Processing and Engineering Options Towards More Competitive Factory Operations	1-3 October, 2018
Processing			
<i>Co-Products Commission</i>			
Co-Products	Brazil	Full use of Sugarcane, Residues and Wastes – Maximizing Efficiency and Profits	21-24 August, 2018
<i>Management Commission</i>			
Management	Argentina	Managing Strategies in Sugar Industry Research Organizations: The Value Proposition	2-5 September, 2019

Each Section held/will hold a successful workshop in the inter-congress period from 2016-2019. For sugarcane technologists, ISSCT workshops are a tremendous resource to meet practically all of your colleagues worldwide in your respective sugarcane research disciplines. They are a wonderful opportunity to form collaborative networks. I can personally attest that Agronomy workshops I have attended in Mauritius, Thailand, Brazil, Australia, South Africa and Réunion were of great benefit in my own professional growth as a scientist. I urge all our ISSCT members to consider attending a workshop in the next cycle.

Thanks

A multitude of people have to work seamlessly together to produce the ISSCT workshops and Congress. I offer my thanks to Editor Peter Allsopp, as well as ISSCT Commissioners Bernard Schroeder, Asha Dookum-Saumtally, Rod Steindl, Regis Leal, and Carolyn Baker, and the section chairs and committee members for their tireless efforts in organizing workshops and editing papers. I also thank the Argentinian Congress Organizing Committee for their efforts in putting on the 2019 Congress in Tucuman, and also Jean Claude Autrey for his categorical knowledge and expert advice on ISSCT matters. Finally, I extend my profoundest gratitude to my wife Aminata for her unwavering support.

Robert Gilbert
Chairman, Technical Program Committee
30 June 2019

Report of the Editor 2016-2019

We started compilation of the 2019 proceedings with about 400 expressions of interest and have ended with 177 papers and 125 posters accepted – about 2000 pages in all. There are 74 in Agriculture, 110 in Biology, 61 in Factory, 33 in Coproducts and 15 in Management, along with 9 plenary papers – a good spread of disciplines and subjects. The remainder were not submitted, were rejected or withdrawn, sometimes, to the chagrin of the section chair and editor, at the last moment because people could not attend the Congress.

Many of the papers presented at the XIX Congress have been published in *International Sugar Journal*, *Sugar Tech* or *Zuckerindustrie*. This is a great arrangement for the Society and gives significant papers a wider distribution. It also reflects well on the quality of Congress papers, and I will continue to promote it with the editors of those journals.

An editor also needs considerable support. I thank the section chairs and commissioners, Bernard Schroeder, Neil Lecler, Asha Dookun-Suamtally, Goolam Badaloo, Régis Goebel, Freddy Garces, Angélique D'Hont, Rod Steindl, Boris Morgenroth, Michael Saska, Regis Leal and Carolyn Baker and the chair of the Technical Program Committee Robert Gilbert for their considerable input into the reviewing process for this Congress. I know how difficult some cases have been and the difficulty of getting willing reviewers. The Society relies on people willing to give their time and we owe them all a debt of gratitude.

Not being fluent in French and Spanish, I've had to call in many favours to get translations of abstracts. Thank you very much to all those who contributed for all your help.

As usual, I've been supported by the ISSCT Secretariat – I thank you Jean Claude.

Over the last few months Jenny has had another round of an oft distracted and stressed Editor, muttering away over his computer. I hope that the trip to Tucumán and the touring after the Congress will be some recompense.

I am sure that not all authors have agreed with my decisions – others, hopefully, have seen me as friendly, helpful, constructive. There will be disappointments and disagreements, but there is usually a good reason for any decision and sometimes it is the way a study is presented that drives any decision. Usually it is a simple message - if reviewers can't understand something, then you haven't presented it well.

Dr Peter Allsopp
ISSCT Editor
15 July 2019

OFFICERS OF THE ISSCT AND CONGRESS

XXX CONGRESS

CONGRESS ORGANISING COMMITTEE

Honorary President	Dr. Juan Luis Manzur (current Governor of Tucumán Province)
Chairman	Eng. Jorge Scandaliaris
Vice Chairman	Eng. Juan Carlos Mirande
Congress Secretary	Mrs. Isabel Antón
Secretary Treasurer	Accountant Ricardo López

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Chair	Philippe Rott	USA
Vice-Chair	Raúl O. Castillo Torres	Ecuador
Chair, Technical Program Committee	Robert Gilbert	USA
Members	Frikkie C. Botha	Australia
	Nicolás J. Gil Zapata	Colombia
	Juan Carlos Mirande	Argentina
	A. Salem Saumtally	Mauritius
	Sanjay Awasthi	India
	Sopon Uraichuen	Thailand
	William Burnquist	Brazil
General Secretary	Jean Claude Autrey	Mauritius
Editor	Peter Allsopp	Australia

*The Executive Committee appoints standing and sometimes *ad hoc* sub-committees to study and report on specific issues such as finance, constitution, eligibility and strategic initiatives.

ISSCT COUNCILLORS

Dora Paz	Argentina	Dani Daniyanto	Indonesia
Matthew Kealley	Australia	Anurag Goyal	India
Paulo E A Uchôa	Brazil	Hossein Moazzen Reza Mahaleh	Iran
Gilles Drouin	Cameroon	Linda Diane Mamet	Mauritius
Martin Akem Ntyene	Central African Republic	Manuel Enriquez Poy	Mexico
Prakash Lakshmanan	China	Hassan Mounir	Morocco
Guillermo Rebolledo Mejía	Colombia	Latif Demola Busari	Nigeria
Joseph Kouame-Kra	Cote d'Ivoire	Muhammad Pervez Akhtar	Pakistan
Carlos E. Saenz Acosta	Costa Rica	Ramon Alvarez Picornell	Philippines
Eduardo Lamadrid Martinez	Cuba	Gavin Smith	South Africa
Oscar Núñez	Ecuador	Kitti Choonhawong	Thailand
Bernard Siegmund	France	Piers Ingram Bostock	United Kingdom
Jürgen Bruhns	Germany	Leslie E. Baucum	USA
Luis Carlos Arroyo	Guatemala	Miguel Ramon	Venezuela

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Agricultural Commissioner	Bernard Schroeder	Australia
Biology Commissioner	Asha Dookun-Saumtally	Mauritius
Factory Commissioner	Roderick Steindl	Australia
Co-Products Commissioner	Manoel Regis Lima Verde Leal	Brazil
Management Commissioner	Carolyn Baker	South Africa
Editor	Peter Allsopp	Australia

*At Congress, the Technical Program Committee forms an enlarged Technical Panel that includes Chairs of Sections and COC Collaborators and meets as often as needed to monitor the organisation.

ISSCT STANDING COMMITTEES

Compliance Committee

Chair Philippe Rott

Two Councillors to be appointed at the first meeting of the Executive Council at the XXX Congress

Finance Committee

Chair Raul Oswaldo Castillo Torres

Members Sanjay Awasthi
Sopon Uraichuen

Constitution and Resolutions Committee

Chair Nicolas Javier Gil Zapata

Members Frederik C Botha
Abdess Salem Saumtally

ISSCT COMMISSIONS AND SECTIONS

AGRICULTURAL COMMISSION

Commissioner Bernard Schroeder Australia

Agricultural Engineering Section

Chair Neil Lecler South Africa
Members Cesar Arevalo Colombia
Brent Griffiths South Africa
Troy Jensen Australia
Oscar Núñez Ecuador

Agronomy Section

Chair Bernard Schroeder Australia
Members David Calcino Australia
Jean Robert Lincoln Mauritius
Fernando Munoz Colombia
Nilza Patricia Ramos Brazil
Sanesh Ramburan South Africa
Yang Rui Li China
Hardev Sandhu USA

BIOLOGY COMMISSION

Commissioner Asha Dookun-Saumtally Mauritius

Germplasm & Breeding Section

Chair	Goolam Badaloo	Mauritius
Members	Monalisa Sampaio Carneiro	Brazil
	Per McCord	USA
	Rajeswari Subramaniam	India
	Edison Silva Cifuentes	Ecuador

Entomology Section

Chair	François-Régis Goebel	France
Members	Julien Buezelin	USA
	Nader Sallam	Australia
	Analia Salvatore	Argentina
	Sopon Uraichuen	Thailand

Molecular Biology Section

Chair	Angélique D'Hont	France
Members	Karen Aiken	Australia
	Jershon Lopez	Colombia
	Yogesh Parmessur	Mauritius
	Derek A. Watt	South Africa

Pathology Section

Chair	Freddy F. Garces Obando	Colombia
Members	Jean Daugrois	France
	Richard Stuart Rutherford	South Africa
	Nicole Thompson	Australia
	Rasappa Viswanathan	India

FACTORY COMMISSION

Commissioner	Roderick John Steindl	Australia
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Engineering Section

Chair	Boris Morgenroth	Germany
Members	Dev Kumar Goel	India
	Adolfo León Gomez	Colombia
	Geoffrey Allan Kent	Australia
	Gary Punter	UK

Processing Section

Chair	Michael Saska	USA
Members	Fernando Cesar Boscaroli	Brazil
	Steve Davis	South Africa
	Ross Broadfoot	Australia
	Anurag Goyal	India
	Nicolás Gil Zapata	Colombia

CO-PRODUCTS COMMISSION

Commissioner/Chair	Manoel Regis Lima Verde Leal	Brazil
Members	Pedro Avram-Waganoff	Germany
	Bryan Peter Lavarack	Australia
	Georges Raoul Edouard Lionnet	Australia
	Upsorn Pliansinchai	Thailand
	Gunshiam Umrit	Mauritius

MANAGEMENT COMMISSION

Commissioner/Chair	Carolyn Baker	South Africa
Members	Michael O'shea	Australia
	Kessawa Pillay Payandi	Mauritius
	S. Raghu	India
	Kerry Redshaw	South Africa
	Klanarong Sriroth	Thailand

HONORARY LIFE MEMBERS

Honorary Life Membership of the Society was initiated at the XI Congress in 1962 in Mauritius and the first members were elected at the XII Congress in 1965 in Puerto Rico.

O. Almazan	Cuba	1983	V. Mason	Australia	2007
L.J.C. Autrey	Mauritius	2010	M. Melgar	Guatemala	2010
M.C. Bennett	UK	2001	P.H. Moore	USA	2016
T.G. Cleasby	South Africa	1983	C.B. Raymond	Philippines	1980
J.C. Comstock	USA	2016	P.W. Rein	USA	2005
B.T. Egan	Australia	1995	B.C. Ricaud	Mauritius	2005
R.M. Hadipoero	Indonesia	1992	D.M Sawhney	India	2001
S. Kartasasmita	Indonesia	1986	R. J. Steindl	Australia	2016
M. Leopairote	Thailand	1992	J.P. Stupiello	Brazil	1989
E.A.L. Lincoln	France	1989	O.W. Sturgess	Australia	1992
F.A. Martin	USA	2013			

Those who have passed away

E.V. Abbott	USA	1968	D.M. Hogarth	Australia	2007
J.R. Allen	Australia	1986	E. Hugot	Reunion	1974
R. Antoine	Mauritius	1983	H.W. Kerr	Australia	1974
G. Arceneaux	USA	1971	N.J. King	Australia	1971
L. Baissac	Mauritius	1965	B.L. Legendre	USA	2005
F. Cordovez	Venezuela	1989	C.L. Locsin	Philippines	1968
J.L. Clayton	Australia	1983	G.P. Meade	USA	1971
H.F. Clements	USA	1968	H. Morganti	Brazil	1977
H.H. Dodds	South Africa	1965	S.G. Patil	India	1999
K. Douwes-Dekker	Spain	1974	J.M. Paturau	Mauritius	1977
J.L. du Toit	South Africa	1974	C.E. Pemberton	USA	1965
C.W. Edgerton	USA	1965	J. Saint	UK	1965
S. Flores Caceres	Mexico	2007	K. Shoji	USA	1989
A.L. Fors	USA	1995	D. Smith	Puerto Rico	1977
A.G. Gallardo	Mexico	1965	G.D. Thompson	South Africa	1992
K. Gard	Australia	1965	A.J. Vlitos	UK	1986
C.D. Grassl	USA	1977	P.O. Wiehe	Mauritius	1974
J.E. Irvine	USA	2001	D.T. Loupe	USA	1986

XXX CONGRESS PAPERS AND POSTERS

Keynote address

Nastari - Giving value to ethanol as a clean and efficient option of energy for future mobility

Plenary papers

Abe - "Nissan Intelligent Power" and solid-oxide fuel cells for electric vehicle applications

Autrey, Jolly, de Perindorge - Competitiveness of different sugarcane industries in an era of low sugar prices

Avram-Waganoff, Morgenroth - Comparison of beet and sugarcane production methods and opportunities for dual production

Jackson - Why are yields of sugarcane not increasing as much as sugar beet (or other crops)?

Jaggard, Rosbrook - Factors affecting recent trends in sugar beet yields and implications for sugarcane productivity

Kovács, Humphreys, Minton, Dynes, Poulalier Delavelle, Minton - Sustainable production of chemicals, fuels and animal feed from C1 gases

Leal, Hernandez, Mantelatto - Sugarcane agricultural residues: potential, bottlenecks and solutions

Schroeder, Wood, Skocaj, Jensen, Allsopp - Enterprise-specific sustainable sugarcane production – making the most of what you've got!

Steindl - You want to build a new WHAT?

Agricultural Engineering papers

Nakayama, Miyamoto, Kanatani, Kojima - Yield-monitoring system for a sugarcane harvester using a laser displacement sensor

Sheini Dashteghol, Naseri, Boroomand Nasab - Comparative study effects on water productivity and sugarcane yield of different depths of installation and spaces between emitters in subsurface drip irrigation

Tesouro, Fernández de Ullivarri, Venturelli, Roba, Romito, Peralta, Donato, Bongiovanni, Erazzú, Fontana - Yields and economic results of sugarcane cultivation under an alternative system compared to traditional management

Yoshimine, Okuyama, Nakayama, Mitani, Sugimoto - Design and implementation of a sugarcane harvest-monitoring system based on machine geo-location and sensor data

Agricultural Engineering posters

Bahadori, Norris - Optimization of farm management for reducing cane losses during mechanized sugarcane harvesting by using SCHLOT model

Bastidas-Obando, Carbonell - Interpolation of NDVI values from thermal time for modelling sugarcane yields in the tropics: a case study for sugarcane fields in Colombia

Caldera Dominguez, Norris - Reducing mechanical harvesting losses: clean cuts, more sugar?

Duarte, Giardina, Casen, Courel, Ponce, Digonzelli, Romero - Planting density and seed cane use: mechanized planting system and manual planting comparison in Tucumán, Argentina

Duquesne, Rondeau - Development of mechanization of sugarcane harvesting in a highly constrained context: the case of Réunion

Giardina, Duarte, Casen, Arrieta, Barceló, Fajre, Romero - Bud losses in a mechanized planting system for sugarcane in Tucumán, Argentina

Maruyama, Kamiya, Kotani, Sugimoto - Evaluation of mechanical deep planting in northeastern Thailand

Neves, Forchezatto, Okuno, Duft, Leal - Trash shredding using a modified primary extractor of a chopper cane harvester

Okuzawa, Maruyama, Sugimoto, Loynok - Evaluation of the usefulness of the crawler harvester HS2000 under commercial conditions in Thailand

Radmehr, Moradi, Baninemeh - Design and implementation of automatic furrow irrigation with IOT technology and a machine-learning algorithm for scheduling in sugarcane plantations

Sustaita, Arantes, Asanza, Geronimo, Apelfeler, de Almeida, de Castro - Irrigation of sugarcane by drip and pivots

Sustaita, Asanza, Alves Araujo, Silva Neto, Morassutti - Center for digital control of agricultural operations in the sugarcane sector

Sustaita, Guimaraes Arantes, Asanza, Tavares, Silva Neto, de Oliveira - Outcomes of a program to improve sugarcane harvest performance

Agronomy papers

Ali, Ali, Naveed, Afghan, Hussain, Khan, Shah - Screening different sugarcane (*Saccharum officinarum*) cultivars under saline sodic conditions

Cantarella, Gonçalves Oliveira, Silva Lourenço, Rodrigues Soares, Carolino Gonzaga, Nunes Carvalho - Nitrification inhibitors reduce the carbon footprint of sugarcane production

Castillo, Salazar, Suarez, Aucatoma - Evaluating a legume break crop and its residual effect on increasing sugarcane production and reducing nitrogen application

Castro, Zotelli, Carvalho, Franco - Sugarcane yield and nitrogen losses associated with different methods of applying N fertilizer

Chalco Vera, Erazzú, Acreche - Effects of sugarcane trash burning and nitrogen fertilization on soil-carbon balances in Argentina

Christina, Le Mezo, Mezino, Barau, Tendero, Auzoux, Todoroff - Modelling the annual yield variability in sugarcane in Réunion

Đinh, Takaragawa, Kawamitsu - Relationship between nitrogen-use efficiency and water-use efficiency of sugarcane under different water regimes

Fandos, Soria, Scandaliaris, Carreras Baldrés, Romero, Scandaliaris - Application of remote sensing and GIS for age differentiation of sugarcane crop classes in Argentina

González Hidalgo, Fernández Vázquez, de León Ortiz, Villegas Delgado, Rodríguez Regal - Influence of conventional tillage on soil organic-carbon under 30 years of sugarcane monoculture in Cuba

Lima, White - Sugarcane-bagasse and leaf-residue biochars as soil amendments for increased sugar and cane yields

Michavila, Racedo, Claps, Ciaccio, Alibrandi, Ciná, Gallo, Welin, Castagnaro - Isolation and characterization of potential plant growth-promoting bacteria from sugarcane

- Miles, Rhodes, Weigel - Prediction of the contribution of soil-nitrogen mineralization to crop fertiliser-nitrogen requirements
- Munoz - Labile C as an indicator of the impact of trash removal on soil health in the sugarcane production system
- Orgeron, Spaunhorst, Gravois - Occurrence and control of weeds in sugarcane in Louisiana - exploring the use of triclopyr for bermudagrass management
- Palomeque, Nuñez, Kingston - Evaluation of alternative fallow-management strategies for sugarcane and associated nitrogen and biology dynamics at San Carlos, Ecuador
- Paredes, Pérez, Alonso, Romero, Rodriguez - Operational and logistics costs of nitrogen fertilization systems in sugarcane production in Tucumán, Argentina
- Portocarrero, Aparicio, De Gerónimo, Fontana, Costa - Herbicide dissipation in vinasse-treated soil
- Poser, Barau, Mézino, Goebel, Ruget - Effect of the germination threshold temperature on the geographical distribution of the variety R583 in Réunion
- Poultney, Versini, Detaille, Feder, Thuriès - Contribution of organic fertilisers to nitrogen nutrition in sugarcane and nitrate leaching in sugarcane agroecosystems in Réunion
- Ramos, Todoroff, Bravin, Marion, Thuries, Versini, Albrecht - Soil spectral signatures for sugarcane fertiliser recommendations through an adapted soil typology in Réunion
- Shinde - Fertigation through drip irrigation in the sugarcane cultivar CoVSI09805
- Singels, Jones, Lumsden - Potential for sugarcane production under current and future climates in South Africa: Sugar and ethanol yields, and crop water use
- Takaragawa, Đinh, Kawamitsu - Mixtures of sugarcane cultivars with different rooting abilities as an option to improve growth and water-use efficiency under drought conditions
- Valdivia-Vega, Valdivia-Salazar, Pinna-Cabrejos - Nitrogen cycle of sugarcane irrigated with 'filter cake water'
- van Antwerpen, Miles, Meyer - Effect of surface residue and potassium sources on potassium availability in two contrasting soils in South Africa
- Vargas, Sánchez Ducca, Sabaté, Romero, Olea - Dispersion of *Sicyos polyacanthus* seeds by mechanical sugarcane harvesters in Tucumán, Argentina
- Vilas, Verburg, Biggs, Thorburn - Quantifying the effects of longevity of nitrification inhibitors on nitrogen losses in simulated sugarcane production

Agronomy posters

- Ahmadpour, Majid, Mesgarbashi, Rajabi-Memary, Farzane, Ebrahimi - Resistance of jungle rice (*Echinochloa colona*) to some selective herbicides in sugarcane fields of Khuzestan
- Alekasir, Koocheki, Nassiri Mahallati, Rezvani Moghaddam - Determination of nitrogen-use efficiency and its optimization in sugarcane
- Caldera Dominguez, Schroeder - Phosphorus management on clays: an experience at San Antonio, Nicaragua
- Chaput, Christina, Versini, Février, Soulié - Modelling the impact of soil and climatic variability on sugarcane growth response to mineral and organic fertilisers
- da Silva, da Silva, Tomáz, Urquiaga, Alves, Marchiori - Nitrous oxide emissions induced by vinasse and nitrogen fertilizer in a sugarcane ratoon crop

- Digonzelli, Criado, Fernández de Ullivarri, Medina, Barcelo, Romero, Rojas Quintero, Sanzano - Analysis of sugarcane harvest residue left as ground cover in Tucumán, Argentina
- Diokhane, Chopart, Sall - Effect of increasing nitrogen rates on sugarcane cultivars in Senegal
- He, Liu, Liu, Liang, Weng, Li - Factors affecting the survival of sugarcane micro-shoots during photoautotrophic rooting
- Jensen, Smith, Defeo - Market-entry spot-spraying system
- Karmollachaab, Saeedi Majd, Taherkhani - Effect of crop rotation on the yield of sugarcane and soil fertility in Iran
- Kawamitsu, Nakabaru, Takaragawa, Dinh, Watanabe, Ueno - Measurement of transpiration rate of sugarcane plants using an agricultural sensor network system
- Leggio Neme, Alonso, Tórtora, Fernández González, Barceló, Fajre, Romero - Effect of nitrogen fertilization and their interaction with biofertilizers on sugarcane production in Tucumán, Argentina
- Li, Zhu, Yuan, Xing, Nong, Yang - Effects of different nitrogen levels on plant growth and expression of glutamine synthetase *SCGS1* in sugarcane
- Liang, Li, He, Xie, Tan - Assessment of black and white plastic film used as a mulch in ratoon sugarcane
- Madhu, Khandagave - Modified methods of fertiliser application for higher productivity of sugarcane on black clay soils in India
- Mansuy, Marion - Managing weeds between two sugarcane cycles using cover crops
- Marnotte, Baillif, Esther, Marion - Understanding more about weeds to better control them
- McCray, Ji - Low soil organic matter content limits sugarcane yields on Florida mineral soils
- Noori, Rezae, Emam, Kahyesh - Effect of phosphate fertiliser application on yield and quality of sugarcane ratoons in Iran
- Romero, Sánchez Ducca, Sosa, Romero, Paredes, Pérez Alabarce, Digonzelli, Leggio Neme - Effect of different planting layouts under drip irrigation and rainfed conditions on yield and economic results of sugarcane in Tucumán, Argentina
- Romero, Sanzano, Rojas Quinteros, Romero - Nutrient uptake and removal by sugarcane cultivar LCP 85-384 grown under rainfed and drip-irrigated conditions in Tucumán, Argentina
- Rossetto, Cantarella, Dias, Piemonte, Lyra, Brandão - Nitrogen volatilization losses from coated-urea products applied to sugarcane ratoon crops
- Sanchez Ducca, Vargas, Sabate, Romero - Topramezone: a new herbicide registered in sugarcane for post-emergent management of *Cynodon dactylon* in Tucumán, Argentina
- Sanzano, Arroyo, Madrid, Navarro, Romero, Digonzelli - Maps of soil properties for evaluating fertility in the sugarcane area of Tucumán Province, Argentina
- Santa María Rodríguez, Martínez Ramírez, García Ruiz, Benítez Puig, Gómez Fernández, Pérez Correa, Vázquez López - A methodology for predicting the risk of soil compaction caused by harvesting equipment
- Singh, Bhatnagar, Singh, Singh - Post-harvest quality profile of some elite sugarcane cultivars under sub-tropical conditions
- Tortora, Ludueña, Núñez, Alderete, Fernández de Ullivarri, Romero, Digonzelli - Biological parameters associated with different sugarcane postharvest residue-management systems

de Ullivarri, Medina, Criado, Tortora, Romero, Digonzelli - Assessment of stalk dynamics, yield components and cane production in sugarcane under different management systems in Tucumán, Argentina

Vivek, Singh, Jain - Management of sugarcane trash for improving soil health and the environment

Breeding papers

Aitken, Glassop, Atkin, Parfitt, Perroux, Rae - How does stalk anatomy of sugarcane relate to fibre quality characteristics?

Aybar Guchea, Ostengo, Chavanne, Cuenya - Pattern analysis of genotype-by-environment interaction for yield and sucrose content of sugarcane in Tucumán, Argentina

Badaloo, Koonjah, Santchurn - Evaluation of Pol % dry matter and tonnes Pol per hectare of eight cultivars, across two contrasting environments, three harvest dates and two crop cycles in Mauritius

Chaisan, Weksanthia, Wannarat - EMS mutagenesis and *in vitro* evaluation for development of new sugarcane clones with tolerance to water deficits

Díaz, Ostengo, Costilla, Golato, Aybar Guchea, Zossi, Chavanne, Paz, Ruiz, Cuenya - Energy traits in three sugarcane cultivars in Tucumán, Argentina

Fooladvand, Ebrahimi, Jahromi, Joni - Reaction of sugarcane clones to cold using morphological, physiological and biochemical characteristics related to cold resistance

Hoarau, Thong-Chane, Barau, Dumont - Comparison between randomized complete-block and alpha designs in sugarcane variety trials in the light of a spatial modelling of fertility trends

Joya, Bertani, Funes, Chaves, Henriquez, Perera, Noguera, González, Castagnaro, Digonzelli - Diagnosis and sanitary status of sugarcane propagation material in different stages of the Vitroplants project during 2014/2018

Koonjah, Badaloo - Climate change in Mauritius and its implication for the sugarcane variety development programme for the rainfed north and west sectors and island-wise

Koonjah, Badaloo, Meethoo - Use of a reliable method to assess potential cane-yield losses in commercial cultivars resulting from flowering and pith development

Ostengo, Cuenya, Zossi, Balzarini - Relative contribution of genetic and environmental effects on non-sugar compounds of cane juice

Salazar Villareal, Lopez Zúñiga, Victoria Kafure, Viveros Valens, Garces Obando - Selection of varieties for humid environments of the sugarcane area of Colombia

Swapna, Pandey, Kapur - Recurrent selection cycles for pre-breeding in sugarcane: enhancing the sugar-accumulation potential in selection cycles

Xavier, Aferri, Perecin, Firmino, Campana, Landell - Using pre-budded seedlings in the first stages of selection speeds up the development of new cultivars

Yang, Liao, Anas, Li, Peng, Huang, Li - Screening of sugarcane for high nitrogen-use efficiency at the seedling stage

Zhao, Irey, LaBorde, Hu - Sugarcane genotypic variation in physiological and yield traits and their relationships

Zhou - Potential of exploiting additive and non-additive genetic effects in sugarcane breeding

Breeding posters

- Acreche, Chalco Vera, Saez, Martínez Calsina, Erazzú - Could the ecophysiological basis of sugarcane be of help in improving sugar yield gains?
- Afghan, Shahzad, Khan - Evaluation of the performance of promising sugarcane clones in different ecological areas of Pakistan
- Anjos, Landell, Quintero Nunez, Cortes Mata, Aranda, Ortiz, Anjos, Canderario - Performance of IAC cultivars in the Tres Valles Region of Veracruz, Mexico, based on agroindustry parameters in different production environments
- Anjos, Landell, Quintero Nunez, Cortes Mata, Aranda, Ortiz, Anjos, Diaz - Performance of IAC cultivars in the Tuxtepec Region of Oaxaca, Mexico, based on agroindustry parameters in different production environments
- Balsalobre, Mancini, Pereira, Anoni, Barreto, Hoffmann, Souza, Garcia, Carneiro - Analysis of yield-related traits in sugarcane
- Cervino Dowling, Diaz, Perera, Dantur, Rodriguez, Bertani, Joya, Castagnaro, Digonzelli, Noguera - Sugarcane Vitroplantas produced at EEAOC under ISO 9001 Standard certification
- Chavanne, Ostengo, Costilla, Diaz, Diaz Romero, Garcia, Espinosa, Aybar Guchea, Cuenya - Yield performance and stability of the new cultivars TUC 95-10 AND TUC 06-7 developed by EEAOC (Tucumán, Argentina)
- Chavanne, Ostengo, Costilla, García, Díaz Romero, Espinosa, Díaz, Aybar Guchea, Cuenya - Yield performance and disease resistance levels of eight sugarcane cultivars newly released by the EEAOC sugarcane breeding program (Tucumán, Argentina)
- Cursi, Gazaffi, Hoffmann, Chapola, Fernandes Junior, Carneiro, Garcia - Genetic gain prediction by different family-selection strategies
- Da Silva, Xavier, Landell, Aferri, Perecin - Pre-budded seedlings in the initial phases of a sugarcane genetic improvement program
- Diaz, Paz, Perera, Insaurralde, Castagnaro, Noguera - The sugarcane Vitroplantas project of the Estación Experimental Agroindustrial Obispo Colombres (EEAOC, Tucumán, Argentina): production of healthy plantlets in the laboratory
- Diaz Romero, Garcia, Figueroa, Cuenya - Vitroplantas Project of the EEAOC (Tucumán, Argentina): results at the stage of hardening of plantlets in a greenhouse (2001-2017)
- Digonzelli, Giardina, Duarte, Fajre, Medina, Pérez Alabarce, Barcelo, Romero - High-quality seed-cane production in registered nurseries of the Vitroplantas Project in Tucumán, Argentina during 2014-2018
- Garcia, Acevedo, Silva, Gomez, Erazzú - Cell-wall chemical-composition analysis of a *Saccharum* spp. progeny for increased bagasse digestibility
- Garcia, Aybar Guchea, Diaz Romero, Ostengo, Cuenya - Effects of the use of alternative nitrogen sources in the selection of individual sugarcane seedlings for resistance to brown rust
- Garcia, Diaz Romero, Ostengo, Forciniti, Cuenya - Effect of high temperatures on flowering and germination of true seed in sugarcane
- Giardina, Criado, Tortora, Leggio, Romero, Moyano Paz, Digonzelli - Rapid multiplication system for high quality seed cane in Tucumán, Argentina
- Gross, Izaguirre, Abiche Maceo - A mathematical model to estimate the genetic value of parents and crosses in sugarcane

Jorge-Gomez, Perez-Oramas, Cabrera-Miranda, Vidal-Guerra, Campo-Zabala, Jorge-Suarez, Cespedes-Zayas, Caraballosa-Torrecilla, Gomez-Perez, Solís-Bauta, Chinaa-Martin, Carvajal-Jaime, Rodriguez-Zayas, Garcia-Perez, Mesa-Lopez, Viera-Colon, Torres-Napoles, Rodriguez-Regal - Strategy to preserve and protect the sugarcane genetic resources in Cuba

Karmollachab, Saeedi Majd - Maturity factors and harvest time of commercial cultivars of sugarcane in Khuzestan

Mohammed, Ishaq, Gana - Evaluation of sugarcane (*Saccharum* spp.) hybrid clones for cane and sugar yields in Nigeria

Noguera, Paz, Díaz, Insaurrealde Rocco, Perera, Castagnaro - Temporary immersion system as an alternative method for the micropropagation of a recalcitrant sugarcane genotype

Ostengo, Rueda Calderón, Bruno, Cuenya, Balzarini - A protocol for identifying breeding groups to select sugarcane genotypes (*Saccharum* spp.) according to sucrose accumulation curves

Rossi Machado, Braga - Sugarcane cultivars grown from 1991 to 2017 in the Brazilian industry

Zapata Martínez, Garcés Obando, Muñoz Flórez, Salazar - Genetic variation in sucrose % cane in sugarcane populations in a semi-dry environment

Entomology papers

Boua, Coulibaly-Ouattara, Goebel - Outbreaks of the African sugarcane stalk borer *Eldana saccharina* Walker (Lepidoptera: Pyralidae) in sugarcane plantations of the northern Ivory Coast: management strategies under implementation

Budeguer, Perera, Michavila, Racedo, Gastaminza, Cuenya, Castagnaro - Optimization of a phenotyping system in sugarcane to evaluate different strategies against *Diatraea saccharalis* (Fabricius)

Kernasa, Jamrutsri, Khamdee - Potential of *Beauveria bassiana* and *Metarhizium anisopliae* isolates as biological control agents of *Yamatotettix flavovittatus* Matsumura (Hemiptera: Cicadellidae), a vector of sugarcane white leaf disease

Li, Qin, Luo, Song, Wei, Ding, Lin - Effects of the host plants *Zizania latifolia* (Manchurian wild rice) and sweet corn on growth and development of the sugarcane shoot borer *Chilo infuscatellus* Snellen

Martin, Silvie, Marnotte, Goebel - A decision-support system for determining sugarcane pest reservoirs

Nikpay, Volpe, Goebel - Spatial distribution of pink stalk borers *Sesamia* spp. (Lepidoptera: Noctuidae) in sugarcane fields in south-western Iran

Pandey, Singh, Singh - Losses due to infestations of the Gurdaspur borer *Acigona steniellus* Hampson (Lepidoptera: Crambidae) in India

Rutherford, McFarlane, Memela, Snyman - Harnessing the sugarcane microbiome for improved resistance to the stalk borer *Eldana saccharina* Walker (Lepidoptera: Pyralidae)

Salvatore, Romero, Pérez, Isas, Iovane, Rojas, Willink - Economic losses in sugarcane production caused by *Diatraea saccharalis* in Tucumán, Argentina

Entomology posters

Atencio, Goebel, Murillo - Host plants associated with *Diatraea tabernella* Dyar (Lepidoptera: Crambidae) in sugarcane in Panamá

- Pérez, Isas, Goebel, M Ayup, Padilla, Salvatore, Gastaminza - Effect of crop residue management on damage and eggs parasitism by *Diatraea saccharalis* (F.) (Lepidoptera: Crambidae) in sugarcane
- Qin, Li, Pan, Song, Wei, Wei, Luo - Effects of exposure time and breeding generations of *Trichogramma chilonis* field populations on parasitism of *Corcyra cephalonica* eggs
- Shang, Huang, Wei, Pan, Lin - Soil pH and organic matter levels in the area of occurrence of the whitegrub *Alissonotum impressicolle* Arrow (Coleoptera: Dynastidae)

Pathology papers

- Afghan, Hassan, Hafeez - Effects of plant-growth-promoting rhizobacteria on diseases, pest insects and agronomic traits of sugarcane
- Bertani, Joya, Henriquez, Funes, Perera - Detection of *Sugarcane yellow leaf virus* in commercial cultivars and the parental collection of the EEAO breeding program in Tucumán, Argentina
- Bertani, Perera, Joya, Funes, González, Cuenya, Castagnaro - Molecular characterization of *Puccinia melanocephala*, the causal agent of brown rust, in Tucumán, Argentina
- Bertani, Perera, Joya, Henriquez, Funes, Chaves, González, Cuenya, Castagnaro - Molecular characterization of *Acidovorax avenae*, the causal agent of red stripe, in Tucumán, Argentina
- Braithwaite, Ngo, Grinstead, Mollov - Ramu stunt virus: genomic diversity across Papua New Guinea
- Fernandez, Ferdinand, Filloux, Guinet, Julian, Rott, Roumagnac, Daugrois - Improvements in virus detection at CIRAD's sugarcane quarantine using both viral metagenomics and PCR-based approaches
- Fontana, Tomasini, Fontana, Di Pauli, Cocconcelli, Vignolo, Salazar - Multilocus Sequence Analysis highlights genetic diversity of *Acidovorax avenae* strains associated with sugarcane red stripe
- Garcés, Ángel, Donneys, Montoya, Cadavid, Angel, Victoria - Current status of the *Sugarcane yellow leaf virus* (SCYLV) in Colombia
- Joomun, Dookun-Saumtally - Molecular characterisation of *Sugarcane yellow leaf virus* from Mauritius
- Puchades, La O Hechavarría, Rodríguez, Rodríguez - Analysis of disease-screening trials for sugarcane mosaic using the Sites Regression model
- Rezamahalleh, Khodakaramian, Hassanzadeh, Fazliarab - Diversity of endophytic and epiphytic bacteria in Khuzestan sugarcane
- Sood, Davidson, Comstock, Gordon, Islam, Baltazar, Sandhu, Zhao - Development of disease-resistant CP sugarcane cultivars in Florida
- Thompson, Wilson - Comparison of diagnostic tests developed for sugarcane streak mosaic virus
- Vishwakarma, Singh, Nigam - Impact of climatic factors on the incidence and severity of pokkah boeng disease of sugarcane

Pathology posters

- Acevedo, Casas, La O, Pérez, Pellón, Delgado, Hernández, Debbes, Luque, Arias - Resistance induced by *Gluconacetobacter diazotrophicus* against leaf scald in sugarcane Vitroplants
- Bertani, Joya, Henriquez, Perera, Cuenya - Assessment of inoculation techniques for screening for resistance to red stripe disease

- Bertani, Perera, Arias, LaO Hechavarría, Zardón Navarro, Debes, Luque, Alfonso Terry, Rodriguez Lema, Cuenya, Acevedo Rojas, Castagnaro - Morphological and molecular characterization of *Puccinia kuehnii*, the causal agent of orange rust, in Cuba
- Chapola, Cursi, Fernandes Junior, Carneiro, Hoffmann - Diversity of sugarcane cultivars under cultivation in São Paulo and Mato Grosso do Sul states 10 years after the detection of orange rust in Brazil
- Funes, Henriquez, Costilla, Chaves, Bertani, Joya, Aybar Guchea, Gutiérrez, González Cuenya - Behavior of sugarcane germplasm of the Sugarcane Breeding Program (EEAOC) against *Puccinia kuehnii*, the causal agent of orange rust, in Misiones, Argentina
- Funes, Henriquez, García, Joya, Chaves, Bertani, González, Cuenya - Establishment of a sugarcane quarantine unit in the Estación Experimental Agroindustrial Obispo Colombes, Tucumán, Argentina
- Grellet Bournonville, Trejo, Chalfoun, Noguera, Bertani, Filippone, Cuenya, Welin, Castagnaro - PSP1 and PSP2 bio-inputs as alternatives to red stripe management in sugarcane
- Hussnain, Afghan - Detection of *Colletotrichum falcatum* Went., causing red rot of sugarcane, by tissue-blot immunoassay (TBIA)
- La O Hechavarría, Puchades Izaguirre, Pérez, Casas, Torres - Sugarcane endophytes as biological controls of leaf scald
- Lin, Li, Luo, Li, Li, Wang. He - Incidence of pokkah boeng in a disease-screening field test in China
- Mungur, Saumtally, Joomun, Dookun-Saumtally - Presence of sugarcane orange rust in Mauritius
- Pérez Gómez, Saez, Ohashi - Quantification of resistance to orange rust in SBP-INTA clones, LCP 85-384 and TUC 77-42
- Piñón Gómez, Armas, Almazán, Legaz, Córdoba - Biochemical mechanisms involved in the interaction between sugarcane and *Xanthomonas albilineans*
- Wei, Qin, Liu, Song, Zhang, Li, Wei, Liu - Sugarcane ratoon stunting disease in China: review of the current situation and disease control
- Yan, Wei, Song, Wei, Zhang, Qin - Functional analysis of the *b* locus of *Sporisorium scitamineum*

Molecular Biology papers

- Chai, Yao, Akbar, Fang, Chen, Zhang - Identification and characterization of a novel DELLA-like gene (ScGAIL) from sugarcane
- Chaves, Ostengo, Alves-Pereira, Gonzalez, Cuenya, Castagnaro, Racedo - Molecular tagging of novel sources of resistance to sugarcane brown rust for use in breeding
- Cheavegatti-Gianotto, Oliveira, Lopes, Gentile, Onosaki, Burnquist - Development of CTC20BT, the first genetically modified sugarcane commercially available in the world
- Di Pauli, Fontana, Lewi, Felipe, Erazzú - Somatic embryogenesis response in Argentinian sugarcane genotypes for *in vitro* mutagenesis application
- Fontana, Orru, Fontana, Cocconcelli, Vignolo, Salazar - Soil microbial community responses to different sugarcane management strategies as revealed by 16S metagenomics
- Garsmeur, Droc, Potier, Aitken, Van Sluys, Simmons, van der Vossen, Henry, Schmutz, D'Hont - A reference sequence for the complex genome of sugarcane

- Li, Wang, Solanki, Yu, An, Dong, Yang - *Streptomyces chartreusis* strain WZS021 stimulates the drought tolerance of sugarcane
- Noguera, Enrique, Ostengo, Perera, Racedo, Costilla, Zossi, Cuenya, Filippone, Welin, Castagnaro - Development of the transgenic sugarcane event TUC 87-3RG resistant to glyphosate
- Parmessur, Dookun-Saumtally - QTL mapping for early ripening and high-sucrose related traits in sugarcane
- Perera, Ovejero, Racedo, Noguera, Cuenya, Castagnaro - TRAP markers allow the identification of transgenic lines that are genetically close to their parental genotype
- Racedo, Budeguer, Perera, Soria Femenías, Ovejero, Cuenya, Castagnaro, Noguera - Development of a further transgenic sugarcane cultivar resistant to glyphosate herbicide
- Romero, Robredo, Uchino, Easdale, Acosta, Yañez Cornejo, Palacio, Serino - Agronomic and compositional characterization of a glyphosate-tolerant transgenic event derived from sugarcane cultivar NA05-2019
- Singh, Singh, Singh, Nigam, Singh - An integrated genetic linkage map based on SSR and TRAP markers for a commercial cross of sugarcane
- ten-Caten, Diniz, da Silva, Nishiyama, Lembke, Souza - Re-annotation of sugarcane assembled sequences from the SUCEST project
- Umeda, Hattori, Sakaigaichi, Tarumoto, Hayano, Adachi, Kimura, Ueta, Enoki, Mori - QTL detection for smut resistance inherited from a Japanese wild sugarcane in the progeny of an interspecific cross
- Zhang, Liu, Yang, Li - Transcriptome analysis reveals the genes responding to *Leifsonia xyli* subsp. *xyli* infection in sugarcane

Molecular Biology posters

- Bertani, Mielnichuk, Perera, González, Vojnov, Cuenya, Castagnaro - Optimization of a genetic transformation method for *Acidovorax avenae*, the causal agent of red stripe disease of sugarcane
- Budeguer, Racedo, Enrique, Soria Femenias, Perera, Cuenya, Wellin, Noguera, Castagnaro - Advances in genetic transformation of sugarcane using direct somatic embryogenesis
- Federico, Chakrabarty, Snowdon, Erazzú - Sorghum to the rescue: use of comparative genomics for the study of bioenergy parameters in sugarcane
- Liu, Li, Zhang, Ou, Zhou, Wei, Yun, Lakshmanan, Li - Identification of drought-response genes in *Narenga porphyrocoma* – implications for sugarcane
- Patil, Pawar, Ghodke - Isolation and screening of bioherbicide producing microorganisms from diseased weeds for the control of *Parthenium hysterophorus* in sugarcane fields
- Perera, Costilla, Ovejero, Aybar Guchea, Figueroa, Noguera, Cuenya Castagnaro- Botanical characterization of new sugarcane cultivars obtained from the EEAO sugar cane-breeding program through molecular and phenotypical markers
- Relles, Discaya, Mana-Ay, Armones - Association analysis of developed simple sequence repeat (SSR) markers to fungal disease resistance

Factory Engineering papers

- Awasthi, Tewari, Gunasekaran - Vinasse incineration with bagasse as a supporting fuel

Calpa Pantoja, Montes, Gómez, Gil Zapata - Evaluation of control strategies in sugarcane mills through dynamic simulation

Chandgude, Patil - Enhancement of mill performance by adopting low-speed milling in the sugar industry

Cruz, De Boeck, Paz - Fibrous sorghum as an alternative fuel during the off-harvest sugarcane season in Tucuman, Argentina

Kent - Understanding milling tandem control

Lawlor, McAdam - The story of the 2015 Pongola Silo Failure and the use of cascade sugar drying to re-establish refined sugar conditioning capacity

Lewinski, Barrientos, Grassmann, Fredriksson, Fantinatti - Analysis of milling operation with electro-hydraulic individual drives in the Ferrari Sugar Mill

Mann - Improvements to bagasse combustion

Matosevic, Veljovic - New sugarcane-mill misalignment coupling

Morgenroth, Stark, Pelster, Singh Bola - Process design and equipment selection for optimized steam and power concepts – the “zero” process steam sugar factory

Muñoz, León, Saldarriaga - Design and implementation of a starting system for a sugarcane shredder

Ospina, Lucuara, Calpa, Gomez, Gil - Strategies for increasing combustion efficiency in the Colombian sugarcane industry

Patil, Chandgude - Implementation of a variable-frequency drive for a fibrizer to achieve the ideal preparatory index

Ramaru, Moor, Raaff, Rosettenstein - Roadmap for improving energy efficiency in an existing sugarcane factory

Roussel, Macé, Ricquebourg, Mazeau, Tailamee - Experience gained from perforated mill rolls in Réunion

Sanchez, Chavarro - Experiences with the use of filtering nozzles in sugar mill XM-type rolls

Sundaram, Nikam, Ghundre - Reduction in bagasse moisture and improvement in mill extraction by controlling reabsorption of juice in mills

Zamora Rueda, Mistretta, Gutierrez, Golato, Paz, Cárdenas - Energy characterization of sugarcane bagasse in Tucumán, Argentina

Factory Engineering posters

de Almeida, Ferraro, Avancini, Montani, Silveira, Sturm - Study of vapor distribution in mist eliminators with computational fluid dynamics

Diez, Salazar, Russo, Ruiz - Iron balance in the sugar-manufacturing process

Olivero - Polishing of final condensate using adsorbent resins

Peluffo, Pagliara Valz - Flujo 2018 - Sugar industry fluid-flow calculations

Rashid, Shehryar - Cane-sugar industry potential and measures to reduce sugar-production costs – Pakistan’s perspective

Santos Castañeda - Fault-tolerant system for three-phase motors

Factory Processing papers

Awasthi, Goyal, Kumar, Mishra - A new vertical continuous vacuum pan design

Bakir, Rackemann, Doherty - Current perspective and future research directions on defecation clarification for the manufacture of raw sugar

Boone, Ihli, Hartsough, Hernandez, Sanders, Klasson, Lima - Application of permanganate to reduce microbial contamination and sugar loss in raw-sugar production in Louisiana, USA

Brichant - A case study of process optimization of resin decolorization and liquid-sugar lines in a sugar refinery

Broadfoot - Benchmarking and improving sugar recovery from final molasses

Couteaux - Plant audits, debottlenecking and efficiency improvement

Daza, Prieto, Palacios, Gil - Microbial action in cane processing goes beyond sucrose loss

Destro, Goto, Barros, Gravina, Straube, Victorelli, Guadalupe-Medina, Mulder, EA Borges da Silva - Enzyme technologies for boosting sugar and ethanol industries

Geisendörfer, Eckhard Flöter - Aspects of vapor bubble nucleation in industrial sugar crystallization: a laboratory study

Gonin, Paillat, Theoleyre, Awasthi, Goyal - Cane sugar refineries: towards a 'green' process solution for fine liquor de-colorization

Langhans - Digitalization in sugar production – mind the foundation!

Madho, Barker - The SMRI-NIRS technology: improving factory performance

Mohan, Yadav, Singh - Water and effluent management in Indian sugar factories: a novel approach

Moller - Changes in massecuite and crystal colour during product pan crystallisation

Moor, Rosettenstein, du Plessis - Key considerations for high-performance continuous vacuum pans

Pelster, Morgenroth, Singh Bola - Impact of condenser performance on sugar crystallization and power requirements of a sugar mill

Rostagno, Olivero - Successful implementation of plate heaters and evaporators in the sugarcane industry

Roussel, Petit, Rondeau - Impact of tops and green leaves on sugarcane processing: laboratory testing

Taira, Ikeda, Saengprachatanarug, Honda, Izumikawa - High-efficiency calibration system for direct cane analysis using a combined NIR system

Thaval, Broadfoot, Kent, Rackemann - Effects of tube dimensions and operating conditions on the heat-transfer coefficient of rising-film evaporators

Urdukhe, Dalvi, Nimbalkar - Treatment of spray-pond overflow wastewater of sugar mills using microalgae

Verma, Nanda, Chauhan, Kore - An improved design of a vertical continuous vacuum pan

Walford - The SMRI-NIRS technology: development, validation and benefit

Walford, Roussel - Development of an ICUMSA method – a comparison of cane analysis methods

Factory Processing posters

- Alva, Charaf, Navarro, Lacina, Kamiya, Ruiz - Multiresidue analysis of pesticides in sugar using GC and LC-MS-MS
- Aparatana, Saengprachatanarug, Izumikawa, Nakamura, Taira - Identification and quantification of trash in delivered sugarcane using hyperspectral imaging and chemometric techniques
- César da Silva, do Patrocínio, da Silva, Neto - Water consumption at four sugar and ethanol mills in São Paulo and Paraná states, Brazil
- Izumikawa, Taira, Kinjyo, Nakamura - Development of a rapid and inexpensive quality-evaluation method for shredded cane using near-infrared spectroscopy
- Juárez, Arrieta Dellmans, Kamiya, Ruiz - Reduction in heavy metal concentrations in sugar produced in Tucumán, Argentina
- Liu, Chang, Liu, Liang - An immunonephelometry dextran method: a comparison with the Haze method and its use in Chinese sugar factories
- Narendranath, Pillay - Elimination of the juice clarifier and the vacuum filter at a cane-sugar plant
- Sastre, Saska, Zossi, Diez, Coronel, Ruiz - Effects of starch, polysaccharides, protein and silicate on the formation of acid beverage floc in refined sugar
- Shalageh, Darouneh - Clarification of sugar juice: lime and flocculant dose optimization
- Sorol, Medina, Juarez, Diez, Sastre, Zossi, Ruiz - Implementation of NIR spectroscopy for evaluating sugarcane quality in Argentina
- Torres, Figueroa, Camacho, Zossi, Ruiz - Quality of sugar produced in Tucumán (Argentina)
- Verma, Saini, Krishnan, Pachpute - Plate falling-film evaporator – an efficient evaporation technology for sugar refineries

Coproducts papers

- Aita, Deng - Production of fumaric acid from bagasse
- Almazán, Pérez, Silva, Escobar, Martínez - Thermodynamic evaluation of the integration of the process of obtaining biobutanol in an autonomous distillery
- Bernal Villegas, la O, Grellet, Castagnaro - Production of phenolic compounds from *in vitro* shoots of sugarcane (*Saccharum spp.*) in temporary-immersion bioreactors
- Chudasama - Exploiting lignocellulosic feedstocks for lignin and chemicals
- De Boeck, Paz - Bioethanol and bioelectricity production from crushing sweet sorghum in a sugarcane factory
- Duft, Okuno, Luciano, Cardoso, Bonomi, Leal - Spatial mapping of trash recovery costs
- Eggleston, Aita - Exploration of sugarcane products as a major source of antioxidant phenolic extracts in commercial foods and beverages
- Fonte Pérez, Lorenzo Llanes, González Cortés - Bagasse gasification to increase electricity generation in Cuban sugar mills
- Franck Colombres, Paz - Gasification of agricultural residues from sugarcane harvests as an alternative for generation of distributed power in Tucumán, Argentina
- Leal, Teodoro - A global view of bioproducts: the sugarcane perspective

Lencina, Robinson, Rearte, Albarracín - Production of unicelular protein and reduction in contamination from the amount of vinasse

Mohan, Srivastava, Agarwal - Value of the conversion of sugarcane-biomass xylans to alkyl glycosides

Mohan, Swain - Bio-energy and efficiency - key factors for the sustainability of the Indian sugar industry

Mohan, Swain, Paroha - Ethanol from B-heavy molasses for sustainability of the Indian sugar industry

Olivério, Boscariol, Ferreira - Brazilian monetary carbon credits (CBio) optimized using sustainable mill technologies

Ortiz, Erazzú - Sugarcane energy: potential electricity production from vinasse produced by the ethanol industry

Patil, Konde, Patil, Burase - 2G lactic acid production from sugarcane bagasse using *Bacillus coagulans* NCIM 5648

Pérez Bermúdez, Garrido Carralero, Tortoló Cabañas - Energy integration for electricity generation and reducing production costs in yeast plants

Rearte, Martínez Pulido, Risso, Peralta, Nuño, Molina Tirado - Utilization of pellets of residues from sugarcane harvesting in biomass combustors

Russo, Salazar, Diez, Ruiz - Simultaneous production of sugar and alcohol: energy optimization including vinasse concentration

Shoko, Mutatu, Nyoni - Extraction and purification of potassium chloride from stillage from the Triangle Distillation Plant

Soares, Duft, Carvalho, Mantelatto, Okuno, Guizelini, Trez, Leal - Sugarcane trash processing and burning alternatives

Sriroth, Sunthornvarabhas - Technological evaluation of antimicrobial adhesives from bagasse lignin

Sustaita, Galon, Asanza, Criscoulo, Silva Neto, Sardella - High performance in electric power generation with sugarcane biomass

Zamora Rueda, Mistretta, Gutierrez, Golato, Paz, Cárdenas - Physicochemical and energy characterization of sugarcane vinasse in Tucumán, Argentina

Coproducts posters

Aita, Moon, Verret, Foster - Production of xylooligosaccharides by acid hydrolysis from energy-cane bagasse as a source of prebiotics

Canseco Grellet, Castagnaro, Ahmed, Dantur, De Boeck, Cárdenas, Welin, Ruiz - Evaluation of a continuous fermentation process at the industrial scale by an indirect ethanol yield calculation-method

Casen, Feijóo, Gómez, Golato, Romero, Ruíz, Cárdenas - Sugarcane trash bale pallets in two locations in the province of Tucumán: energetic and structural characterization

Molina, Quaia, Machado, Paz - Start-up and monitoring of the granulation process in a pilot anaerobic reactor using vinasse as a substrate

Romano Nanni, Ruiz, Tosi, Albarracín - Production of sugarcane, sugar, bioethanol and vinasse in Tucumán Province since the implementation of the Biofuels Law

Scandaliaris, Soria, Fandos, Carreras Baldres, Scandaliaris, Virginia Paredes - Application of remote sensing and GIS for the estimation of production, location and cost of transport of agricultural harvest residues for energy production

Vitrac, Teal, Goebel, Shili-Touzi - An innovative mobile sugarcane crusher to develop an island economy

Management papers

Auzoux, Scopel, Christina, Poser, Soulié - AEGIS, an extended information system to support agroecological transition for sugarcane industries

Brown, Ullivarri, Paez, Blanco - Protected Productive Landscape of Ledesma S.A.A.I.: Reconciling nature conservation with production in areas of high environmental value

Murray - Deterioration in cane quality and milling performance in the South African sugar industry from 2007 to 2016

Pérez, Paredes, Rodriguez, Scandaliaris - Economic and production indicators of the sugar industry in Tucumán, Argentina, 1994-2017

Radmehr, Baninemeh - Design and implementation of a web-based knowledge management system in the Sugarcane and By-products Development Company in Iran

Sall, Chopart - Towards integrated management of water resources at the Senegalese Sugar Company: current results and prospects for a water/food/energy nexus

Solomon, Rao, Swapna, Kumar, Singhal - Corporate Social Responsibility initiatives and their impact on sugar-mill performance: a case study of the Seksaria Biswan Sugar Factory, India

Thitithawonwong, Athipanyakul, Potchanasin - Factors affecting the adoption of the Bonsucro Standard amongst Thai sugarcane farmers

Management posters

Garolera De Nucci, Tonatto, Romero, Cárdenas, Mele - Life-cycle assessment of sugarcane-based ethanol production in Tucumán, Argentina

Jumman, Bezuidenhout - Proposing a theoretical framework to explain adoption dynamics within a community

Jumman, Govender, Raghunandan - Preferred and default knowledge-exchange communication pathways at the South African Sugarcane Research Institute

Santos-Basto - Development of an Excel-VBA application for sugarcane crop-production management

Sustaita, Asanza - Outcomes of good management in the sugar and alcohol industry in Brazil

Tonatto, Garolera De Nucci, Casen, Ruiz, Romero - Use of energy in sugarcane production in Tucumán, Argentina

Watt, van Antwerpen, van Heerden - The water, bioenergy and climate-change integrated agricultural research strategy of the South African Sugarcane Research Institute

Workshop reports

D'Hont, Badaloo - Improvement of sugarcane for stress environments: the 2018 ISSCT Germplasm and Breeding and Molecular Biology joint workshops

Garcés, Viswanathan, Thompson, Daugrois, Rutherford - Challenges and advances in sugarcane pathology - keys to resolve emerging issues and to formulate innovative disease management strategies: the 2018 ISSCT Pathology Workshop

Goebel, Beuzelin, Salvatore, Uraichuen, Behary-Paray - Solving regional arthropod management challenges in a global world: the 2018 ISSCT Entomology Workshop

Leal, Lavarack, Umrit - Full use of sugarcane, residues and wastes – maximizing efficiency and profits: the 2018 ISSCT Co-products Workshop

Schroeder, Marion, Lecler, Gilbert - Farming for the future - improving productivity and ecological resilience in sugarcane production systems: the 2018 ISSCT Agricultural Engineering, Agronomy and Extension Workshop

Steindl, Morgenroth, Saska - Processing and engineering options towards more competitive factory operations: the 2018 ISSCT Factory Commission Workshops