



SASTA NEWS

Newsletter of the SA Sugar Technologists' Association

May 2005

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RECOGNITION FOR TWO SASTA MEMBERS

Since February 2004, Council has conferred Honorary Membership on two longstanding SASTA members, Dr BS Purchase and Mr TJ Murray in recognition of their contributions and association with SASTA. To date a total of 32 Honorary Memberships to SASTA have been awarded since the inception of the organization in 1926.



Brian Purchase

Brian Purchase is known for the significant role that he played at the SMRI over 24 years, 16 of which were in the position of Director. His contributions to SASTA have been many and varied and are unusual in that they include papers in both the agricultural

and factory sections. He has been the recipient of the Talbot-Crosbie award.

Brian has been a member of the SASTA Council for 16 years and served as SASTA Vice-President and Chairman

of the congress organising committee for three years.

As part of his contribution to practical technical progress, he initiated the SMRI-SASTA innovation award. For 15 years he coordinated the Factory Control Advisory Committee (a sub-committee of SASTA). It is this Committee that plays an important role in ensuring that sampling and analytical procedures in the sugar industry make use of modern technology to generate accurate and appropriate comparisons of factory productivity.

Brian has actively contributed to several international sugar technology societies including the ISSCT, the Sugar Technologists Association of India and the Italian Society for Sugar Technology.



Tim Murray

Tim Murray's association with SASTA dates from 1974 when he attended the first ISSCT in South Africa. Having served as a Council member for many years he held the position of Vice-President of SASTA for two years and President for four years.

Tim's association with SASA began in 1975 when he joined the South African Sugar Association Experiment Station as Senior Agricultural Engineer. Since 1988 he has served as a Council member of the South African Sugar Association.

His long association with SA Cane Growers Association has recently culminated in his role as Chairman in 2003, a position that he currently holds.

Tim is an active member of the ISSCT and is currently an Executive member. In 1992 he led the South African delegation of 40 representatives in Thailand and in 1995 was the leader of the South African delegation of 26 representatives in Columbia. More recently he led the South African delegations to India (in 1999) and to Guatemala earlier this year.

Tim's varied roles and experience in the sugar industry, of which only a few are highlighted here, are extremely valuable to SASTA and have been duly recognised by the Council.

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ISSCT Congress Guatemala 2005



The Conference Company staff at the South African stand with some international dignitaries.

Congresses of the International Society of Sugar Cane Technologists (ISSCT) are held every three years and the 25th (Silver Jubilee) congress was held in Guatemala from 30 January to 4 February 2005, preceded by three days of pre-congress tours.

ISSCT congresses attract representation from most of the world's sugarcane industries and the South African industry traditionally plays a significant role in the technological activities through the presentation of papers and chairing of sessions. The congress provides an excellent opportunity to learn about other industries, make contacts and experience the culture of a different country. The South African delegation comprised staff from SASRI, SMRI, Canegrowers and two of the major milling companies and was led by Tim Murray (Chairman, Canegrowers). He and Dr Kathy Hurly (current SASTA President) did an excellent job in presenting the bid that won the right for South Africa to

host the next ISSCT Congress, which will be held in Durban in 2007.

Guatemala 2005 had a lot to commend it – extremely well managed and smooth running, an affordable congress and insights for many into technology for the future. The formal congress sessions were held in the Camino Real International Convention Centre in Guatemala City. All delegates were accommodated in excellent hotels within easy walking distance of the centre, which made for easy management of the sessions. The social activities provided a glimpse of a complex society, an amazing history and a rich culture. It was undoubtedly one of the most successful ISSCT congresses of recent decades. The pre-congress tours were to the major cane growing area located at low altitude on the Pacific coast approximately 100 km south-west of Guatemala City. Some impressions of the country, its sugar industry and the congress are given below:

Interesting observations of the Guatemalan sugar industry

- Guatemala is similar to South Africa in many ways. It has a long, turbulent history which, until recently, involved major human rights abuses by the authorities. Like South Africa, Guatemala recently aspired to a democratic government and, also like South Africa, Guatemala has a complex social structure which still encompasses a gulf between the 'haves' and 'have nots'. Also like South Africa, Guatemala is a country of varied landscapes and great beauty. It was encouraging to witness the pride that all citizens expressed in being Guatemalan and the love they have for their country, known locally as 'the land of eternal spring'.
- Over about the last decade, the Guatemalan sugar industry has developed from being an insignificant exporter to exporting more sugar than South Africa, where exports now comprise 72% of their total production! What makes this impressive is that they are competing in similar markets to Brazil!
- An underlying theme of the congress was 'industry realignment or re-engineering' given the back-drop of EU price reforms and the domination of the highly efficient Brazilian industry. Papers were delivered on this topic amongst others by Guatemala, Mauritius, India and Australia, highlighting the need to drive efficiencies and sugar quality up, and costs of production down. Most of the strategies involved consolidation and chasing economies of scale. Interestingly, the South African industry appears to be moving in the opposite direction with the fragmentation of land holdings and milling companies!
- Historically, land holdings in Guatemala were similar to South Africa with more than 60% of the land being owned and operated by independent growers, many of which were small-scale in nature, and with the balance being owned by MCP companies. In the last 10 years the millers have leased almost 100% of



the area under cane, enabling them to achieve significant economies of scale in terms of agronomics, harvesting and transport. The land owners have benefited significantly from the rental income received in addition to off-farm income derived from available job opportunities, both in the agricultural and non-agricultural sectors.

- The consolidation of the cane supply chain achieved by the Guatemalan industry enables remarkably quick adoption of new improved technologies. This strategy is imperative in order to compete against Brazil in terms of both efficiency and sugar quality. Agriculturally, it was impressive to see large-scale application of tissue culture technology to produce healthy propagation material and speed the uptake of new varieties. Similarly, there is almost industry-wide use of a natural 'pesticide' based on the fungus *Metarhizium* to control a spectrum of soil pests, with measurable benefits.
- A significant strength of the Guatemalan industry is its commitment to team work within milling companies, between milling companies, between millers and land owners and between other industry stakeholders including government. Interactions focus on efficiency enhancements, sugar quality improvements and the implementation of new technology, which seems to have created a dynamic and enthusiastic culture in their industry. Adult learning initiatives and group facilitators are widely used to identify solutions and assist in decision-making. Engendering unity amongst stakeholders is one of Guatemala's key success factors.
- Another underlying theme that was strongly developed at the congress was that industries based on sucrose are becoming a thing of the past. Instead, sugarcane industries are fast being 're-engineered' into 'biomass-based' industries, where sugar and molasses production are co-products or even by-products. This was the topic of one of the plenary sessions. Almost without exception, sugarcane industries

have established or are in the process of establishing domestic co-generation and/or ethanol markets in collaboration with their local government authorities. The commissioning of new co-generation plants appears to have been fairly rapid in recent years because the market for electricity is well established. The commissioning of ethanol plants is less advanced because the international ethanol market is still in its infancy.

South African delegates' presentations

The technical programme was extremely worthwhile and the South African delegates effectively 'flew our flag'. Mike Butterfield and Eddie Meyer both spoke at plenary sessions, on the topics of Breeding for a Better Industry and Green Cane Harvesting respectively, and both presented other well-received papers at other sessions. Frikkie Botha, Jan Meyer and Abraham Singels also presented papers, as did Adey Wynne.

ISSCT 2005 – Factory Sessions

A thread which ran through all the factory sessions was the need to improve energy utilisation throughout the sugar factory. This includes not only the optimal use of steam by the factory, but also the more efficient production of this steam and energy. It is very apparent that efficient energy utilisation is already being practised in Central and Southern America; steam-on-cane values of around 40% are the norm in many of these industries, and the intentional breeding of cane varieties with very high fibre levels is common.

It is interesting to note that in many instances the South African industry has for many years employed energy efficient practices (such as extensive vapour bleeding – a technique only now being 'discovered' in some industries) but has never really capitalised on these.

Some of the more interesting (from a South African perspective) issues and papers were as follows:

- Factory Energy Utilisation

A paper on the prioritising of factory designs for optimal energy efficiency was presented by Lavarack, Hodgson and Broadfoot. Their work indicates that a steam-on-cane value of around 37% has the best economic return under Australian conditions.

The use of falling film evaporators was described (Journet), and the advantages in terms of energy utilisation that the use of these vessels allow, was presented.

- Boiler operation optimisation

An interesting concept – the drying of bagasse with steam – was described by Morgebroth and Batstone. Although this technique is widely practised in the beet industry, it is not common in cane. Drying of bagasse to moistures of less than 10% has been demonstrated in a pilot plant.

- Co-product manufacture

Wright, Silva and Amador presented some work carried out at a Nicaraguan mill where the steam economy of the factory was improved in order to allow for increased co-generation. Steam-on-cane values of 40 to 41% were obtained, with plans in place to reduce this value to 38%.

Co-generation is widely practised in Southern / Central America. Work carried out in Brazil was described by Lamonica, Fioranelli, Linero and Leal, and in Cuba by Delgado.

A number of papers were presented on the production of ethanol as a co-product. Of special interest was a paper by Finguerat describing the development of the sugar / ethanol industry in Brazil. Further papers discussed the past and future development of the ethanol industry in the Central American region (Davis, Stuart and Bhim, and Nogueira).

Techniques such as the Dedini Rapid Hydrolysis process (Oliverio and Hilst) and the Organosolv process (Rossell, Filho, Proença and Leal) for the manufacture of ethanol from bagasse were described. Both these techniques could allow for increased ethanol production using the same

planted cane area (assuming that ethanol is already being produced from a molasses), or the production of ethanol from bagasse only.

- Optimising Factory Operations

Two interesting papers presented on factory optimisation were a continuous magma preparation system developed in Australia (Broadfoot and Petersen) and efficient centrifugal operation and maintenance (Grimwood, Thewlis and Dean); this was a particularly practical and useful paper.

Plenary papers

A number of the plenary session papers dealt with the overall sugar production perspective; the overall economic growing, harvesting and milling of sugar cane. Of particular interest was a paper describing the 're-engineering' of the Australian industry. The focus here was on factory size/number rationalisation, the implementation of improved processes in the factory to increase productivity (strongly driven by the SRI), a focus on potential co-products (mainly electricity at this stage) and a strong emphasis on miller/ grower relationships.

Another paper in a similar vein was one describing the reform process of the Mauritian industry (Autry and Tonta). Here again the focus was on the rationalisation of the number and size of mills, 'rightsizing' the work force and co-product production (again mainly electricity), although a number of speciality sugars are also produced for export into the EU.

The breeding of new varieties of cane to meet the demands of the future was discussed. It was interesting to hear that in the Barbados industry, cane with fibre levels of 25 to 35% is being produced. The emphasis here is obviously on co-generation, and a speaker noted that "some sugar is made".

**Article written by: Adey Wynne,
Paul Schorn, Roger Bailey**

SASTA WINS BID TO HOST ISSCT 2007

Dr Kathy Hurly (SASTA President) attended the ISSCT in Guatemala to bid for the 2007 Congress. Fortunately or unfortunately, when the SASTA group reached Guatemala there was no competing bid and so the strategy changed and the group went into marketing mode to ensure that the 1 200 ISSCT Congress delegates were fully informed about South Africa, KwaZulu-Natal and of course the South African Sugar Industry!

Selling South Africa and the province of KwaZulu-Natal is not very difficult and the audiovisual extravaganza we used was a hit each time it was shown. We were also able to fly Nontundo Ngubane (the Polka Advert 'serious' fame) out for two nights and she wowed the delegates on two occasions, the most moving at the final gala dinner when she sang "Nkosi Sikelela Afrika" and moved the banquet to tears, especially some of our well known ex-pats who will go unmentioned.

All of this intense effort would not have been possible without the support and expertise of the accompanying group from the Conference Company. Nina Freyson-Pretorius and her group were able to 'wow' the SASTA stand and sell our SASTA Bid. By the end of the congress we had created a 'wow' and ISSCT 2007 in South Africa had become a reality.

SASTA will therefore be hosting the ISSCT Congress from 23 July to 6 August 2007. The congress format involves pre-congress tours, a technical programme, mid-week day tours and a post-congress tour.

We are fortunately able to showcase South Africa and our Southern African neighbours. The pre-congress tours will be to Zambia or Mozambique, and then a fairly comprehensive tour that will include Mpumalanga, Swaziland and Zululand. The tours will also be designed to include some sight seeing (23 July to 28 July 2007). The post-congress tour will be to Mauritius (4 August to 7 August 2007).

The technical programme will start on Sunday, 29 July 2007 with registration and end on Friday, 3 August 2007. All these events will be held at the International Convention Centre in Durban, South Africa. The Accompanying persons will have special tours organised on the pre-congress, congress and post-congress programme.

Our job as SASTA now begins. We have to invite as many people to attend the congress as possible. All potential sponsors and potential exhibitors must be identified, and of course I need as much assistance as possible. So each time one of you travels overseas please take some marketing information with you or direct interested parties to the ISSCT (www.issct.org) or SASTA (www.sasta.co.za) web sites.

by Kathy Hurly (SASTA President)



SASTA WORKSHOP TRANSPORT SYSTEMS

Date: Tuesday 20th September

Venue: Kwashukela auditorium

Cost: R100 per SASTA member delegate
 R130 per non-member delegate

(Includes lunch and morning tea and a copy of the days presentations)

R.S.V.P: To book a place and receive an invoice contact:

Danile Macdonald email: sasta@sugar.org.za

Tel: 031-5393205 Fax: 031-5395406



Workshop Programme (Draft - subject to change)

08h30 – 09h00 REGISTRATION

09h00 – 09h10	Welcome and IntroductionKathy Hurly (SASRI)
09h10 – 09h40	Benchmarking Cane Harvesting and Haulage CostsEddie Meyer (SASRI)
09h40 – 10h10	Experience with Central Tyre Inflation Systems.....Des Armstrong (MONDI)
10h10 – 10h40	Experience with On-Board Weighing Systems.....Kevin Cole (Kevard Estates)

10h40 – 11h00 TEA

11h00 – 11h30	Optimising Loading Zone Placements.....Carel Bezuidenhout (UKZN)
11h30 – 12h00	Scheduling Vehicles (ASICAM).....Ryan Giles (UKZN-SASRI)
12h00 – 12h30	Scheduling Vehicles (JPT).....James van Zyl (NCT)
12h30 – 13h00	Overloading and PBS.....Paul Nordengen (CSIR)

13h00 – 14h00 LUNCH

14h00 – 16h00	Panel Discussion
Chairperson:	Adrian Wynne (CANEGROWERS)
Panel:	All presenters
	What components of the current transport system needs to change?
	What transport systems do we need to change to?
	How can this change be initiated?
16h10 – 16h30	Wrap Up and Way ForwardPeter Lyne (SASRI)

16h30 CLOSE



What happened after the SASTA Renewable energy workshop?

The SASTA workshop initiated by Dr Adey Wynne, and organized by SASTA, was extremely successful in getting the interested parties involved. Having played its role in starting the discussion, SASTA Council has decided to leave the follow-up to the industry role-players. However here follows a brief update from Adey Wynne of what is happening now.

Since the SASTA workshop in May 2004, there has been plenty of interest and activity around producing renewable energy in the South African sugar industry.

Arnoud Wienese from the SMRI was commissioned by the Department of Minerals and Energy Affairs (DME) to investigate biomass resources in South Africa capable of producing "green" electricity including cogeneration within the sugar industry. A consultant appointed by the DME has also visited sugar industry stakeholders regarding the production of ethanol gel from sugarcane as a safe and environmentally friendly substitute for paraffin for use in low cost cooking stoves.

A number of meetings have been attended by sugar industry stakeholders including the Biodiesel Joint Implementation Committee, the South African Bureau of Standards to define acceptable standards of bioethanol for blending with petrol, a Dept of Mineral and Energy Affairs workshop to discuss how best to monitor the adoption of renewable energy in terms of government's target of producing 10 000 GW of renewable energy by 2013, and various others.

A fair amount of behind the scenes activity has also taken place, which is now culminating in an exploratory meeting on 9th June 2005 between the DME and sugar industry representatives to discuss the way forward in the South African sugar industry.

GALLIC THUNDERBOLT

compiled by Jerry Gosnell

Lonrho Sugar Corporation, one of Africa's most successful sugar companies, was the creation of one man, René Leclézio, Lonrho's "Gallic Thunderbolt". From its beginning in Malawi in 1965 he made it an international force in the sugar world by the time he retired in 1994.

No less important, especially in the whirlwind years of 1967 and '68, was the support of the charismatic Tiny Rowland, Chief Executive of Lonrho. His close ties with many African Heads of State opened the door to numerous successful sugar projects for this dynamic duo.

Lonrho Sugar was that rarest of animals, a multinational operating exclusively in Africa which always made profits; survived floods, droughts and coups and established a reputation for long term commitment to the communities in which it worked.



Tiny Rowland and René Leclézio

This book is a collection of reminiscences of the people who were close to René Leclézio and the story of the group he created, told by the men and women who were there.

The book contains over 300 pages of 170x240 mm with over 70 photos.
Enquiries to gosnell@venturenet.co.za

In South Africa, books are obtainable from JM Gosnell, PO Box 200, Ramsgate 4285.
Tel/Fax +27-39-3144 549, at a cost of R100 plus R10 p&p.





ANNUAL GENERAL MEETING OF THE SA SUGAR TECHNOLOGISTS' ASSOCIATION

TO BE HELD ON 20 JULY 2005 AT 13:30
IN THE AUDITORIUM AT KWASHUKELA
170 FLANDERS DRIVE, MOUNT EDGECOMBE

AGENDA

1. Apologies
2. Minutes of AGM of 28 July 2004
3. Matters arising from the minutes
4. President's report
5. Membership
6. Financial Statement
7. Election of auditors
8. Congress Organising Committee report
9. Result of ballot for Council members 2005/2006
10. General

ISSCT Announcements

The South African representation on ISSCT sections

The strength of the ISSCT depends on the enthusiasm and dedication of its technical sections. There are five commissions: agricultural, biological, factory, co-products and the newly-created management commission. We were very proud to have a number of South Africans elected into section positions during this congress. We would like to congratulate Dr Abraham Singels (Agronomy), Mike Butterfield (Plant Breeding), Barbara Hockett (Molecular Biology), Peter Lyne (Agricultural Engineering), Adey Wynne (Management), Dave Meadows (Factory Processing) and Raoul Lionnet (Co-Products). Tim Murray was reappointed to the ISSCT Executive Council and Kathy Hurly is the South African Councillor.

ISSCT Workshops for 2006

At the last Council meeting it was agreed that the following workshops would take place in 2006. For further details consult the ISSCT web page (www.issct.org) Agronomy (Thailand), Ag Engineering (Argentina), Breeding (Equador), Entomology (Australia/PNG), Molecular Biology (Mauritius), Pathology (Guadeloupe), Engineering (Mexico), Processing (Louisiana), Co-Products (NE Brazil).

ISSCT Honorary Life Membership

Many of you will be very interested to hear that Dr Peter Rein and Dr Ben Legendre both received honorary life membership for their outstanding contribution to the ISSCT.

SASTA Congress 2005

To register for Congress 2005, go to the website (www.sasta.co.za) and click on "Congress 2005" – "register attendance here"

Queries regarding registration:

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Queries about anything else:

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Guest speaker at Congress 2005:

Dr Anthos Yannakou will speak on

**"KEY TECHNOLOGY CHALLENGES FOR
THE SOUTH AFRICAN SUGAR INDUSTRY"**

This address will deal with the following issues:

- The state of science and technology in South Africa, and latest policy developments with specific reference to industry and the private sector
- Potential impact of international and South African science and technology trends on the South African sugar industry, and major challenges for the future
- Recommendations to the South African sugar industry on using technology to increase future competitiveness.

The address will focus on how a mature industry, largely based in

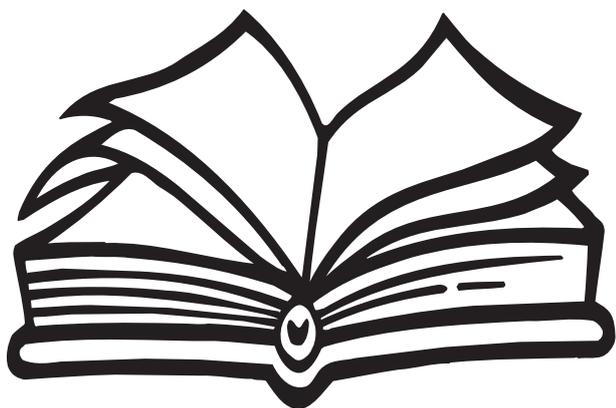
the "industrial" age, can rejuvenate and increase effectiveness and efficiency in the emerging "knowledge" age.

Key technology issues for the future competitiveness of the industry will be discussed, such as the use of smart manufacturing and information technology, research and development in areas such as biotechnology, improving supply chain management which is highly inefficient in South Africa, as well as contributing through technology to alleviating poverty and creating growth.

The Congress 2005 draft programme is included for reference.



Have you heard about the new SASTA Laboratory Manual?



The South African Sugar Technologists' Association has since its inception in 1926 been actively contributing to chemical control in sugar factories mainly through the Factory Control Advisory Committee. The 1st edition of the Laboratory Manual for South African Sugar Factories was published in 1962 and contained the recommended methods for chemical control in our factories. The 2nd edition, published in 1977, was more comprehensive and covered a wider range of methods. It also included a section on miscellaneous methods for the analysis of non-factory products and a section on First Aid in line with global trends of the time.

The 3rd edition, which is generally referred to as the "Orange Manual", was published in 1985 and included new methods such as the innovative use of gas chromatography, a new analytical technology. It also put great emphasis on the Official Methods and the use of Official procedures and equipment. The Orange Manual is still being used on a daily basis in sugar factories all over southern Africa and has always been in high demand.

The 4th edition is about to make its appearance and will be available at this year's 79th Annual SASTA Congress in July. The manual will be launched in electronic format with interactive Contents and Index pages. As part of the Official Methods it will include the RV cane payment calculations and the calculation method for clarifier mud recycling. A

demonstration of the new "CD lab manual" will take place during Congress 2005.

'New' factory control parameters such as VR (Value Recovery), MERC (modified estimated recoverable crystal), XRE (Crystal Recovery) and fructose and glucose ratios as well as 'new' definitions such as DRI, refinery definitions such as jets, fine liquor and brown liquor will be explained. In addition, refinery calculations such as yield will be included.

Due to the range of instrumentation available today no reference will be made to specific makes or models. However, routine instrument checks and calibrations will be incorporated into specific methods as a guide and to encourage routine maintenance and quality control. Most of the Reference Tables will be replaced by mathematical equations that can easily be incorporated into spreadsheets or a laboratory information management system (LIMS). This not only encourages the use of electronic media but will also reduce the human error associated with calculations and data transfer.

Each method will include an explanation of its purpose and main principles as well as a comprehensive list of required equipment, chemicals and standard solutions. Health and safety clauses and a guide to the use of personal protective equipment with specific reference to the handling of hazardous chemical substances will be included in accordance with international standards.

For the inquisitive mind, calculations and standard curves will be explained in detail with an associated worked example using typical experimental values. Comprehensive references, including relevant methods in the Orange Manual and the SMRI accredited methods, will be provided.

All in all, the 4th edition is an exciting leap into the information age which will empower factory and laboratory staff alike to take tenure of chemical control in our sugar factories.

