



SASTA NEWS

Newsletter of the SA Sugar Technologists' Association

November 2004

SASTA Secretariat contact details: sasta@sugar.org.za

Telephone: +27 (0)31 539 3205

Website: www.sasta.co.za

78th SASTA Congress 2004

The opening day of the SASTA Congress on 27th July was held at the Holiday Inn Durban Elangeni. The guest speaker Andre Vermaak, using a backdrop metaphor of a climber en route up a mountain, challenged the industry in his address on "Gearing up for the new business paradigm", to accept that unpredictability was a reality and that in our rapidly evolving global context, different ways of doing business must be entertained. Novel thinking and new flexible strategies are constantly needed in order to negotiate one's way to the next peak in an ever-changing landscape. He stressed the role of technology and education of the workforce in equipping our industry for success.

The award ceremony saw the first presentation of the Robin Renton Memorial award to Lloyd Melrose (Illovo Sugar Company Ltd), and the announcement of the winner of the new SASTA student award: Martha Graham (University of KwaZulu-Natal). Walter Redinger received the Agriculture Innovation award for his innovations in harvester design. The Kynoch, Cecil Renaud and Talbot-Crosbie awards were presented by Gerhard van der Walt to the winning authors from Congress 2003 (see 2003 awards presentation pictures).

In the first plenary session, Caroline Le Jars gave an overview of the Reunion sugar industry, and Steve Davis presented the annual review of the milling season in Southern Africa. The second plenary session focused on Renewable energy: An opportunity for the South African sugar industry, a topic which had been the theme of a very popular SASTA workshop in May 2004. The last session for the day contained papers of interest to both the agricultural and the factory sectors of the industry.

The cocktail party and the authors' dinner were held at The Oyster Box hotel in Umhlanga, a venue change that was welcomed by most regular delegates.



Delegates from Swaziland: From left: Enos Hlope, Patrick Myeni and McGinty Farourakis

In this issue...

78th Congress 2004

Awards 2004

2003 awards presentations

Renewable energy workshop May 2004 report

SASTA Council 2004/2005

SASTA Workshops planned for 2005

SASTA student awards 2005: call for nominations

SASTA Congress 2005: dates and 1st call for papers

New Lab manual to be published as first electronic edition

Noticeboard

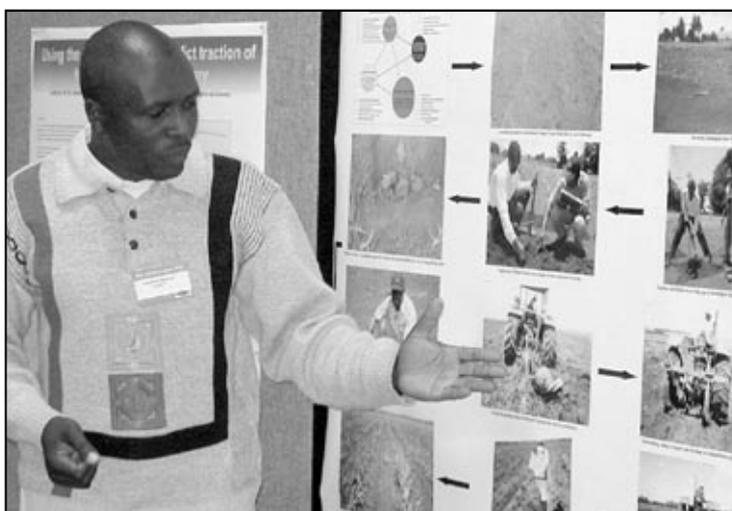


For the remaining three days the Congress moved to the Kwa-Shukela Convention Centre, where factory and agriculture sessions were held concurrently. In the nine agriculture sessions, 37 papers and 3 posters were presented and valuable interchange ensued in the discussion time. The seven factory sessions contained 17 papers and 5 posters. The final factory session, the "Commercial session", was introduced for the first time this year to allow sugar industry suppliers an opportunity to advertise their technology or products through technical presentations. These papers were not included in the official Proceedings. As this session was well received by the factory/technical delegates and the opportunity welcomed by the supplier industry, SASTA will expand on the commercial session concept and introduce technical workshops at next year's Congress. In addition, it is intended to increase endeavours to attract more technical papers from the factory sector, which in turn will encourage more of the process and engineering personnel to attend and take part in SASTA Congress 2005. Congress 2004 was well supported by the exhibitors and sponsors and it is their contribution and that of the SASTA Congress Organising Committee that ensures that congress remains affordable, interesting and enjoyable while maintaining a high scientific standard.

A total of 414 delegates were recorded, with 335 coming from South Africa, 60 from other African countries, and 19 from overseas. The number of local delegates was lower than in 2003, and possibly reflected the challenging economic times that the industry is facing, or the fact that "retired members" and "students" were required to pay towards the cost of Congress this year.



Delegates enjoy tea and muffins amongst the exhibition stands at Kwashukela



Jonathan Mutonyi from Kenya presenting his poster.

SASTA STUDENT AWARDS 2005

Call for nominations

SASTA considers two awards: one each from the factory and agricultural sectors.

The awards will be made for outstanding postgraduate research as demonstrated by:

- A successfully examined dissertation that has given rise to internationally recognised publications or patents; and
- A motivation that details the relevance of the work to the sugar industry.

Prizewinners will be expected to present their findings at the forthcoming SASTA congress in one of the plenary sessions on the Opening Day.

SASTA Council will appoint a representative committee to appraise the nominations as required.

Send your nominations to: SASTA, Private Bag X02, Mount Edgecombe 4300 or deliver them (mornings only) to SASTA office, SASRI, 170 Flanders Drive, Mount Edgecombe.

Each nomination must be accompanied by (1) contact details (postal, telephone and email) of the nominee, (2) contact details of the nominator, (3) a copy of the dissertation, (4) proof of the successful examination of the dissertation, and (5) the motivation.

Closing Date: 1 March 2005

Enquiries: sasta@sugar.org.za



AWARDS 2004

AGRICULTURAL SECTOR PRIZES

Kynoch prize

Which is the most important crop when assessing nitrogen applications – the next or the last?

PJ Thorburn, HL Horan, IM Biggs and SE Park - CSIRO Sustainable Ecosystems, Queensland, Australia (Presented by Peter Thorburn)

The philosophy embodied in this paper by Peter Thorburn has come out of many years' experience in the Australian sugar industry. It provides a refreshingly new approach to fertiliser application with the goal of achieving sustainable nitrogen levels in the soil at low cost to the grower and the environment. Rather than fertilising for the coming crop, one can aim for replacing the amount of nitrogen lost from the previous crop, the majority of which is harvested cane and can be estimated easily. The paper was not only topical and brilliant in concept but also presented in an engaging way. The written paper is substantial, thorough and scientifically sound.

Highly commended in the Kynoch category

Towards antibiotic resistance-free transgenic sugarcane

AT Gill, SJ Snyman, BAM Potier and BI Hockett, Variety Improvement Programme, SASRI (Presented by Amogelang Gill)

In this paper Amogelang Gill explained the widespread use of antibiotic resistance genes as negative selection markers in the plant genetic engineering process and the strategic need to avoid these in the medium term future. The core of the work reported was a series of experiments designed to apply and optimise a novel alternative selection system where the selection gene confers a metabolic and positive growth advantage to the recipient cells. The paper demonstrated logical and successful development of this important system for sugarcane tissue culture and transformation. The presentation stood out for its lucidity despite the trickiness of the research and difficult concepts involved. The written paper is equally clear and informative.

Cecil Renaud prize

Financing, viability and costs associated with transferring sugarcane land to previously disadvantaged individuals

D Armstrong -Tongaathulett Sugar Ltd (Presented by David Armstrong)

Land redistribution is a topic of crucial importance in Southern Africa. In this paper David Armstrong described how Tongaathulett Sugar Ltd went about cooperating with government in its Land Reform programme by assisting with transformation of the parastatal company Natal Trust Farms

Ltd. The goal was the transfer of land and agricultural practices to a number of small to medium scale local growers. Exacting viability studies were conducted to determine the optimal number of farms, investigate most beneficial financial structures and devise a process of equalising risk and profit. Comprehensive business plans were developed. Although the project was not taken to completion for political reasons, the approach provides an admirable model for future reference and possible application.

Highly commended in the Cecil Renaud category

Cost implications and grower perceptions of phosphorus fertiliser recommendations based on soil tests not calibrated for sugarcane

F Botha and JH Meyer, Extension and Soil Sustainability Programmes, SASRI (Presented by Francois Botha)

This very practical paper brought to the SASTA forum some of the serious problems being encountered in the Northern sectors of the industry, particularly in relation to soil analysis and the management of fertiliser input costs. The recent trend for growers to use laboratories where soil tests have not been calibrated for sugarcane has led to considerable confusion and diverse recommendations, often including over-application of phosphorus and potassium. Francois Botha reviewed the implications of such practices in an informative and accessible way at the Congress. The written paper is a worthy record of the views expressed and contains valuable supporting data.

Poster prize

Fallowing and green manuring practices for irrigated sugarcane

D. Nixon, Soil Sustainability Programme, SASRI (Presented by David Nixon)

This winning poster dealt with practices that constitute potential solutions to the soil degradation and yield decline phenomena associated with long term monocultures. The poster layout was very good; logical and easy to understand. It contained a clear and concise statement of work objectives and provided valuable data and good interpretation of results. Authors were asked to speak for a few minutes and in this case the verbal presentation showed clear understanding of the background, the problem, the investigation and the outcomes.

FACTORY SECTOR PRIZES

Talbot-Crosbie Prize

Quantification of crystal conglomerates using image analysis

DJ Love, David Love Process Engineering CC, SD Peacock, Tongaathulett Sugar Limited and GT Schumann, formerly of Tongaathulett Sugar Limited (Retired) - (Presented by David Love)



The paper outlined the application of complex computerized image analysis procedures to conglomerate quantification, and, while not providing a solution, was presented such that it invited the audience to want to solve a seemingly simple problem created by crystal orientation. The mathematically challenged were eager to provide a practical solution to support the creative efforts of the 'big guns'.

Highly Commended in the Talbot-Crosbie category

Raw sugar filterability improvements with syrup clarification

SC Mkhize and SB Davis - Processing Division, SMRI (Presented by Sikhumbuzo Mkhize)

The paper was well presented and highlighted the potential benefits to sugar quality at a time when global trends are demanding an improved level quality.

Cecil Renaud Prize

Prize not awarded

The judges felt that very small number and scope of the factory papers presented did not warrant the awarding of the Cecil Renaud prize for 2004.

Highly Commended in the Cecil Renaud category

Flow meters for determining mixed juice mass

CP Myers and N Hiranman - Illovo Sugar Limited, Umzimkulu Mill (Presented by Carl Myers)

This paper presented a practical alternative to dealing with MJ scale outages, and, although much more work is necessary before gaining general acceptance, it does suggest that there may be a future alternative to expensive batch scales.

Poster prize

General comments:

All posters were of a high standard and made a substantial contribution to the congress. Technical content was good and in all cases of value to the industry.

The detection of protein in refined sugar

Y Naidoo & R Simpson- Analytical Division, SMRI (Presented by Lola Naidoo)

A thorough investigation and development work of a high standard. This was the only poster in which the objectives were plainly stated. The information was clearly presented in an attractive poster. This work makes significant progress in an area that is notoriously complex and difficult. The procedures developed can be immediately implemented in the factories.

This poster was considered the best poster of the conference and deserving of the prize.

Robin Renton Memorial Award

There were no authors meeting the criteria for this award this year.

SASTA CONGRESS 2005 – DATES AND FIRST CALL FOR PAPERS

**Dates for the 79th SASTA Congress in Durban are:
19-22 July 2005**

Diarise Now!

Registration will be available on the SASTA website from March 2005.

Deadlines for authors:

Abstracts of approximately 250 words (on the SASTA abstract template- available from sasta@sugar.org.za) must reach the SASTA office by 17 January 2005. The abstracts submitted could be for full length papers, short communications or posters (all of which will form part of the official published Proceedings) or they could be for technical workshop-type presentations or commercial presentations (which will not be included in the Proceedings).

On acceptance of the abstract:

Papers: Full papers must be submitted by 15 March 2005. Full papers will be refereed and edited.

Short communications: Short communications must be submitted by 15 March 2005. Short communications will be edited only. Note : Short communications must comply with the "rules" as indicated in the "Instructions to authors", or they will be rejected.

Posters: a 1200-word summary of the poster (to be published in the Proceedings) must be submitted by 18 April 2005. Poster summaries will be edited only. The poster itself must be put up for display from 19 July 2005.

SASTA intends to have a poster session focused on application of technology for African conditions. This does not preclude posters on other topics.

Technical workshop/ commercial presentations: The speaker will bring whatever handouts they wish to distribute to the delegates on the day of their presentation.

Abstracts and full papers/short communications/poster summaries should be sent to:

Email: sasta@sugar.org.za

or to: SA Sugar Technologists' Association

SASRI, Private Bag X02, Mount Edgecombe, 4300

KwaZulu-Natal, Republic of South Africa

Tel: +27 (0)31- 5393205 Fax: +27 (0)31-5395406

The "Abstract submission template" and the "Instructions for authors" will be sent out electronically to all members whose e-mail addresses we have. If you would like a copy of these files, please send a message to that effect to sasta@sugar.org.za and one will be mailed to you electronically.



Proposed Workshops for 2005

TRANSPORT SYSTEMS

This workshop will be run as a "roadshow": once in Durban at Kwashukela Auditorium and once at a venue in the Lowveld. Dates proposed are early in May 2005. Probable cost will be R80.00 to SASTA members and R120.00 to non-members (includes morning tea, lunch and a copy of the day's proceedings).

Possible programme will include presentations on

- Types of Vehicles and Haulages Costs
- Developing Cost Effective Vehicles
- Machinery Costing and Benchmarking
- Optimising Loading Zone Placements
- Developing Improved Offloading Facilities
- Overloading
- Scheduling.

After lunch a panel Discussion, with input from the floor, is proposed to address questions like:

- What components of the current transport system need to change?
- What transport systems do we need to change to?
- How can this change be initiated?

CONSERVATION PRODUCTION SYSTEMS

Proposed date is September 2005 in Durban at Kwashukela. The cost will be R80 per SASTA member delegate and R120 per non-member delegate (Includes lunch and morning tea and a copy of the days proceedings)

The programme could have presentations on

- Yield Decline and Soil Health in SA Sugar Industry
- No Till, the Concept and Experiences
- Trashing as a Proven Conservation Practice
- Infield Compaction Due to Vehicles
- Precision Agriculture
- Intercropping and Fallow Cropping
- Application of CMS: lessons from Brazil

The afternoon panel discussion will focus on questions like

- What components of the current production system needs to change?
- What production systems do we need to change to?
- How can this change be initiated?

Once details are finalised, the programmes will be sent by email to all people on the SASTA address book. If you are not on this address book, send your email addresses in now! If you do not have email, but would like to receive the programme when ready, phone and leave your name and address for snailmailing of the programme advert early in 2005.

Enquiries and bookings: Danny Macdonald Tel: 031-5393205 Email: sasta@sugar.org.za

New SASTA Laboratory Manual due for release in September 2005

This 4th edition of the SASTA Laboratory Manual will incorporate new or revised calculations, equations, procedures and analytical methods and omit those which are no longer relevant. It is intended to be published as a CD-ROM to reduce cost and improve access; the manual will still be easily printable. Sections thereof or individual methods may also be purchased from the SASTA web site. License agreements including regular updates will apply.

Although there are only five copies left, the 3rd edition of the manual, published in 1985, is still available at a cost of R150.00 (plus postage and bank fees if paying in a foreign currency).

SASTA Council 2004/2005

President: Kathy Hurly

Vice President: Stan Munsamy

Elected members: Roger Bailey, Carolyn Baker, Frikkie Botha, Steve Davis, Janice Dewar, Ed Grantham, Dave Meadows, Barbara Schoonees, Paul Schorn, Adrian Wynne

Co-opted members: Deborah Carson, Ant Edmonds



Kathy Hurly



Stan Munsamy



Workshop on Renewable energy

To most of the population the swaying green fields represent the sugar we put in our tea, yet this crop has a multitude of other uses, as shown during the SASTA Workshop on Renewable Energy held on 25th May 2004. The workshop, organised by SASTA Council member Dr Adrian Wynne of Canegrowers, attracted much attention from sugar industry role players and Government representatives alike.

Andre Otto, Deputy Director: Renewable Energy, from the Department of Mineral Resources and Energy said that, in the past, renewable energy (RE) was seen in the light of rural development, and there was as yet no government strategy for RE that involved the sugar industry as a major role player. However, with an expected 2.8% increase in consumption per year, the generation capacity of our ageing power stations would not be able to meet demands by 2007, and the Government welcomed other sources of energy that could contribute to the national grid.

Although South Africa is classed as a developing country, it has one of the highest per capita CO₂ emissions in the world, with 90% of its energy supply emanating from fossil fuels. Of this energy supply, 75% comes from coal and 9% from wood. Most of the wood is harvested in an unsustainable way that creates an environmental and energy security risk for the rural poor. A reduction in emissions could also have a significant impact on foreign trade and thus on the SA economy.

Arnoud Wienese of the Sugar Milling Research Institute outlined possible co-generation scenarios from a milling aspect. Reducing the process steam consumption, and increasing steam and power generating efficiencies would be necessary. He explained several ways in which this could be done. Sugarcane biomass has the potential to produce 5848 GW/h, and some urgency was identified to establish RE as a reliable power source.

RE would have a beneficial effect in more than one area. Country wide, the impact on household incomes would be a saving of R128 million compared with coal-fired power, based on 2003 prices. In addition to this, thousands of new jobs would be created. Of the 15 sugar factories in the country, only three at present contribute to the national grid, and only in small amounts.

However, the answer to the problem is not simply using bagasse or, indeed, the entire cane plant to generate electricity. Other factors also have to be taken into account. For example, the industry has for some time been encouraging green cane harvesting, which involves the return of tops and trash to the soil to increase organic matter content and promote soil sustainability. On the other hand, it would be beneficial for the atmosphere if the plant was burnt in a power station rather than in the field. Although SA produces only 2% of the world's sugar, burning of cane before harvest is contributing substantially to global warming by emitting N₂O, CH₄, CO₂ and CO into the atmosphere. Another factor that should be considered is that cane cultivars have up to now been bred for maximum sucrose and minimum fibre content. As pointed out by Dr Frikkie Botha, Director of the South African Sugarcane Research Institute, to breed for biomass at this stage would take at least until 2020 before suitable cultivars would be produced.

The country will nevertheless remain reliant on coal for at least the next two decades, and Government will continue investigations into nuclear options as a future energy source.

The workshop also highlighted an anticipated demand for petrol 'expanders' when leaded petrol is banned in January 2006. The SA petroleum market will need more than a million cubic metres (or 870 000 tons) of additive to meet demand. This volume cannot be met by the sugar industry

alone, as it would require 1.6 to 1.7 million tons of sugar annually. Dr Brian Purchase, of the School of Chemical Engineering at the University of KwaZulu-Natal, provided the workshop with valuable information on worldwide trends regarding petrol expanders.

In the 1980s, the production of ethanol from bagasse was explored, and was found uneconomical at the petrol prices that prevailed at that time. Advances in technology and rapidly increasing petrol prices today make the production of ethanol more attractive. As fossil fuels become more scarce, prices can be expected to rise even more rapidly. The substrate for ethanol would be surplus molasses, surplus bagasse



and some trash. In addition, in years when the world market price of sugar was low, export sugar could be diverted to production of ethanol at a more lucrative price. Since 2003, this practice has been followed by Brazil, a major sugar producer, which now oscillates between exporting sugar and producing ethanol according to price. Brazil has also introduced a flexi-fuel engine which is able to switch from petrol to ethanol, and has created a surge in the demand for ethanol. Other countries in Europe, as well as India and Australia, are also actively developing fuel ethanol. The USA has legislated a 10% blend of ethanol, and is busy installing an ethanol pipeline from California to Peru.

Dr Purchase mentioned several cost savings that would be applicable to producing ethanol rather than crystal sugar, and felt that price trends warrant increased research despite the high capital costs that would initially be incurred.

Looking beyond fuel and electricity generation, Andre Kudlinski of the Department of Trade and Industry outlined other uses for sugar, the end products of which are all at present imported by SA, and for which the Government has economic incentives in place for local production. These included antibiotics, amino acids used in animal feeds, human dietary supplements, pharmaceuticals, flavour enhancers and sweeteners, citric acid for use in beverages, foods, biodegradable detergents, pharmaceuticals and cosmetics, and lactic acid for processing and preserving meat.

For the present, sugarcane in SA will still be grown primarily for crystal sugar production. However, sugar industry role players were urged not to miss the opportunity presented by the demand for renewable energy.

Amended from the article written by Dorothy Carslow.

2003 Awards Presentation



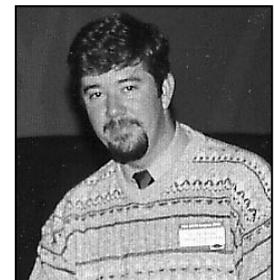
Left to right: Gerhard van der Walt (SASTA Patron), Jeh-Han Omarjee, Patrice Cadet, Tania van Antwerpen (three of the six co-authors who won the Kynoch prize)



Geoff Maher and Carl Pftenhauer shared the Cecil Renaud award (Agriculture)



Barbara Schoonees received the Talbot-Crosbie prize



Lloyd Melrose, winner of the Robin Renton memorial Award as well as co-winner of the Cecil Renaud award (Factory)



Gerhard van der Walt with Mano Moodley and three of his co-authors: Richard Gelling, Paul Schorn and Greg Mitchell who were co-winners of the Cecil Renaud award (Factory).

WHAT IS THE INTERNATIONAL SOCIETY OF SUGAR CANE TECHNOLOGISTS ?



The International Society of Sugar Cane Technologists (ISSCT) has a long and proud history, having been in existence for 80 years. The objectives of ISSCT were first formulated at the 3rd Congress held in San Juan in 1932. In general terms they have not changed since that time, emphasising the need to foster at all times the free and frank interchange of technical information and to support worthy research projects designed for the benefit of all.

The present Mission Statements reads as follows:

"The Society is committed to the economic and sustainable advancement of the sugar cane industries of the world and associated communities, through promoting innovative research, development and adoption of technology, and by sharing knowledge among its members for their professional development".

Each Congress is organised by a Congress Organising Committee (COC) composed of members for the hosting local Technologists' Association. The ISSCT Technical Co-ordination Committee (TCC) is responsible for selecting and editing papers and posters, for arranging any plenary themes and workshops and also looking after all the technical affairs of ISSCT.

The TCC is chaired by the ISSCT Vice-Chairman and comprises the Commissioners for each of the four Commissions, namely: Agriculture, Biology, Factory and Co-products.

There have been 24 ISSCT Congresses since the initial meeting in Hawaii in 1924, and ISSCT has grown from 12 to about 75 participating nations. In 1977 in Brazil, the number of delegates at the ISSCT Congress exceeded 1 000 for the first time. The first Proceedings were pub-

lished in a paperback form, with 216 pages and sold for \$2. Today the Proceedings has well over 1 000 pages, is published in two volumes and sells for \$100. It is also available on CD-ROM.

In addition to the Congress, which is held every three years, each of the nine technical sections of ISSCT holds a Workshop in the intervening period between Congresses. This was introduced in 1984, has proved to be highly successful and receives enthusiastic response from members. South Africa has hosted workshops for most of the technical sections, including Agricultural Engineering, Agronomy, Entomology, Molecular Biology, Pathology and Plant Breeding. Staff from the Sugarcane Research Institute and Sugar Milling Research Institute are well represented on the various sectional committees.

SASTA BID TO HOST THE 26TH CONGRESS IN 2007

It is proposed that the South African Sugar Industry, through the South African Sugar Technologists' Association, make a formal bid to host the 26th ISSCT Congress in Durban in August 2007. This bid would have to be made by South Africa's Executive Member of the ISSCT Council, TJ Murray, at the closing session of the next Congress, to be held in Guatemala in January 2005.

We will let you all know if we are successful!

NOTICEBOARD

Laboratory Manuals (3rd edition): R150.00 (only 5 copies left!)

SASTA Ties: R30.00

Congress Proceedings 2000-2004 on CD: R100.00

Selected years' hard copy Proceedings from prior to 2000: R50.00

Sugar Spoons: R100.00

Exhibition space or sponsorship opportunities at Congress 2005

All items obtainable from the SASTA Administrator:

Danile Macdonald

Tel: 031-5393205 (mornings only)

Fax: 031-5395406

Email: sasta@sugar.org.za

