PROCEEDINGS

of the

1997 CONFERENCE

of the

Australian Society

of

Sugar Cane Technologists

held at

CAIRNS, QUEENSLAND

From 29th April to 2nd May 1997

Edited by B.T. Egan

COPYRIGHT

ISSN 0726–0822
PROCEEDINGS OF AUSTRALIAN SOCIETY OF SUGAR Cane TECHNOLOGISTS

TUESDAY, 29TH APRIL 1997

MORNING SESSION — 10.30 a.m.

GENERAL SESSION
Chairman: R.N. Johnson

Paper: A long-haul road transport and cane handling system at South Johnstone Mill, by B.J. Koppen, D.A. Kenny, K.J. Smith and D.G. Fry ............................................. 1


Paper: GPS and GIS: management tools for millers and growers, by T. Fuelling and R. Wright ............................................. 14

AFTERNOON SESSION — 1.30 p.m.

GENERAL SESSION
Chairman: G.F. Longden


Paper: Mulgrave ccs declines to record low levels in 1993 and 1995, by G.M. Pope ............. 30

Paper: Development and testing of a prototype yield mapping system, by G. Cox, H. Harris and R. Pax ............................................. 38

Tea break 3.00 p.m. — 3.30 p.m.

Paper: Targeting high soil levels in cane, by D.R. Ridge and A.I. Linedale .................... 44

Paper: Quarantine survey of some Torres Strait Islands in 1996, by R.C. Magarey .................. 51

Paper: Transaction costs in the sugar industry — actual and potential, by R.N. Chapman, B.J. Milford and G.H. Burrows ..................... 54

WEDNESDAY, 30TH APRIL 1997

MORNING SESSION — 8.00 a.m.

AGRICULTURAL SESSION
Chairman: K.J. Chandler


Tea break 9.30 a.m. — 10.00 a.m.

Paper: Effect of fallow history on cane and sugar yield of a following plant cane crop, by A.L. Garside, J.E. Berthelsen and C.L. Richards ............................................. 80

Paper: The relationship between root parameters, soil treatment and sugarcane shoot growth in glasshouse experiments, by R.C. Magarey and D.J. Grace ............................................. 87

Paper: Australian sugarcane improvement: current concerns, by N. Berding and J.K. Bull ..................... 93

POSTER SESSION — 11.30 a.m.

Brief presentations by authors of agricultural posters. Posters will be displayed all day Wednesday and Thursday in the allotted area. Authors should be in attendance immediately after presentation and at tea breaks.
MANUFACTURING SESSION
Chairman: G.M. Pope

Paper: Modelling the extraction processes of milling trains, by G.A. Kent .................................. 315
Paper: An alternative model for the extraction performance of first mills, by C.R. Murry .... 322
Paper: On the capacity of prepared cane to penetrate grooved surfaces, by C.J. Leitch, C.J. Adam and J.G. Loughran .................................. 341

Tea break 10.00 a.m. — 10.30 a.m.

Paper: On the development of a continuous chute height measurement using vibrations, by A. Smith and R.A. Pax .................................. 360

AFTERNOON SESSION — 1.30 p.m.

AGRICULTURAL SESSION
Chairman: P.J. Nielsen

Paper: Field efficacy of Metarhizium anisopliae as a remedial treatment for negatoria and Childers cane grubs, by P.R. Samson, N.G. McGill, W.J. Harris, R.J. Milner and P.G. Allsopp............... 103
Paper: Field evaluation of Metarhizium anisopliae for control of greyback cane grub (Dermolepida albohirtum) in north Queensland sugarcane, by L.N. Robertson, C.G. Kettle and P. Bakker .................. 111

Tea break 2.30 p.m. — 3.00 p.m.

Paper: Susceptibility of cane grubs to the insecticide chlorpyrifos, by K.J. Chandler and J.P. Erbacher .......... 118
Paper: Does green cane harvesting conserve soil water? by O.T. Denmead, C.L. Mayocchi and F.X. Dunin ........ 139

CONCURRENT AGRICULTURAL SESSION
Chairman: D.R. Ridge

Paper: The optimum harvester forward speed, by S. Kroes and H.D. Harris .................. 147
Paper: Cane loss due to basecutter and knockdown damage, by S. Kroes .......................... 155

Tea break 2.30 p.m. — 3.00 p.m.

Paper: The use of a computer model to investigate improved cane cleaning systems, by P.A. Hobson .......................... 162
Paper: An investigation into the optimal length of sugar cane billets, by M.M. Vitale and S.A. Domanti ........ 170
Paper: An investigation into harvesting preferences in the central region, by L.E. Brennan .. 179

MANUFACTURING SESSION
Chairman: D.R. Paddock


Tea break 3.00 p.m. — 3.30 p.m.

Paper: ATP as an indicator of microbial contamination in crushing juices, by B. Jones, J. Joyce, W. Shipton and D. Rodman .................. 396
THURSDAY, 1ST MAY 1997

MORNING SESSION — 8.00 a.m.

AGRICULTURAL SESSION
Chairman: P.J. Nielsen

Paper: Sugarcane and soil acidity — why should we be worried? by A.D. Noble, R.G.V. Bramley, A.W. Wood and A.P. Hurney

Paper: A review of sodic soils research in the Queensland sugar industry, by G.J. Ham, A.Z. Cox and G.G. McMahon


Paper: Regional total phosphorus budgets for sugar production in Queensland, by P.M. Bloesch, G.E. Rayment and J.S. Pulsford

CONCURRENT AGRICULTURAL SESSION
Chairman: K.J. Chandler


Paper: Variation in the effectiveness of rainfall meeting crop water requirements in the Australian sugar industry, by M.J. Robertson and R.C. Muchow


Paper: Clonal improvement of sugarcane based on selection for moisture content: fact or fiction, by N. Berding

MANUFACTURING SESSION
Chairman: D.R. Paddock

Paper: Sugar mill effluent treatment in ponds, by M.G. Wood, L. Forsell, B. Smolski, J. Keller and M.W. Dawson

Paper: A model of spray pond cooling, by E.T. White, J. Morris and R. Broadfoot

Paper: Towards an integrated cane transport scheduling system, by A.J. Pinkney and P.G. Everitt

Paper: Hot axle box detection, by P.G. Everitt, W.H. Ritchie and C. Werner

Tea break 10.00 a.m. — 10.30 a.m.

ANNUAL GENERAL MEETING — 10.30 a.m.

Chairman: D.M. Stevenson

(a) Secretary’s report and financial statements
(b) Committee reports
(c) General business

AFTERNOON SESSION — 1.00 p.m.

AGRICULTURAL SESSION
Chairman: K.J. Chandler

Paper: Soil erosion in caneland tillage systems, by T.J. Glanville, G. Titmarsh, M.M. Sallaway and F. Mason

Paper: Comparison of soil physical properties of row and inter-row: a basis for control traffic in cane, by D. McGarry, M.V. Braunack, G. Cunningham, N. Halpin, M. Sallaway and D. Waters
MANUFACTURING SESSION
Chairman: D.R. Paddock

Paper: Crystal growth rates in high grade massecuite boilings, by K.F. Miller and R. Broadfoot .............................................. 441
Paper: Modelling of a low grade vertical cooling crystalliser using computational fluid dynamics, by M.A. Sima and J.A. Harris .............................................. 448

AGRICULTURAL AND MANUFACTURING DELEGATES WILL DEPART FOR THE VARIOUS TOURS AT 2.15 p.m. AND 2.45 p.m. RESPECTIVELY

FRIDAY, 2ND MAY 1997

MORNING SESSION — 8.00 a.m.

AGRICULTURAL SESSION
Chairman: P.J. Neilsen

Paper: Determining irrigation requirements and crop yield using a water balance model, by T.G. Willcox, R. Kane and M.A. Smith .............................................. 270
Paper: An economic evaluation of irrigation methods at Bundaberg, by T.G. Willcox, R. Kane, M.A. Smith and J. Mackson .............................................. 280
Paper: Sugarcane yield responses from furrow irrigation at Mackay, by L.S. Chapman .............................................. 285

Tea break 9.30 a.m. — 10.00 a.m.

Paper: The development of guidelines for surface irrigation in areas with variable infiltration, by S.R. Raine, D.J. McClymont and R. J. Smith .............................................. 293
Paper: Using soil survey data to estimate readily available water (RAW) for sugarcane irrigation, by P.R. Zund and A. McDougall .............................................. 310

MANUFACTURING SESSION
Chairman: G.M. Pope

Paper: Commercial applications of the SRI swirl burner combustion system, by T.F. Dixon and H. Martel .............................................. 456
Paper: Modelling combustion in corner-fired sugar mill boilers, by M. Luo, B. Stanmore and T. Dixon .............................................. 466

Tea break 9.30 a.m. — 10.00 a.m.

Paper: The drying of sugar crystals, by Xie Yu Wu and E.T. White .............................................. 493

MORNING SESSION — 11.30 a.m.

CLOSING PLENARY SESSION
Chairman: D.M. Stevenson

(a) President's medals
(b) Installation of new executive