

EFFECTIVE RESEARCH ANALYSIS AND TECHNOLOGY TRANSFER USING A MULTIDISCIPLINARY APPROACH: A SUMMARY OF THE 3RD ISSCT MANAGEMENT AND TECHNOLOGY TRANSFER WORKSHOP

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Abstract

This paper summarises the activities of the ISSCT Management and Technology Transfer workshop held 24-27 August 2011 in Mamallapuram, Tamil Nadu, India. Presentations were grouped in four sessions: delivery of extension to small-scale growers; packing and delivery of technology; managing innovation and diversification; managing technology development and extension. Included in the workshop was a 2-day tour to the Nellikuppam region (100 km south of Mamallapuram), one of the oldest sugarcane growing and processing areas in India. Highlighted was the evolution and growth of a modern integrated complex biofactory that produces sugar, ethanol, biogas, bio-earth and cogeneration of electricity from sugarcane biomass, whilst the second day focused on small-scale farmers. The workshop concluded that recent increased involvement of major agribusinesses will further enhance the pace of change, that RD&E needs to develop a stimulating environment for innovative research, that extension models be revisited to meet customer needs, that learnings from other industries and multinationals be integrated in the management and research program; that there is an urgent need for a pool of young talent in sugarcane R,D&E, and that effective linkages between miller and farmer and their full participation and support are essential for the successful delivery of research results faster and better to ensure profitability and sustainability of all stakeholders.

Introduction

The 3rd ISSCT Management Workshop was held from 24 to 27 August 2011 in Temple Bay, Mamallapuram, Tamil Nadu, India. The workshop was attended by 42 delegates from seven countries (Australia, Fiji, Mauritius, Thailand, Japan, Iran and India). The theme of the workshop was *Effective Research Analysis and Technology Transfer Using a Multidisciplinary Approach* and consisted of a pre-workshop tour and a technical session. The four topics in the technical sessions were:

- Delivery of extension to small-scale growers,
- Packing and delivery of technology,
- Managing innovation and diversification,
- Managing technology development and extension.



This location is at an historic 7th century port city of southern India famous for its shore temples and ancient architecture and has been classified as a UNESCO World Heritage site. The workshop was hosted by EID Parry India Ltd, a company established in 1788 and presently engaged in the manufacture and marketing of a wide range of products such as sugar, alcohol, co-generation of power, nutraceuticals and bioproducts.

Pre-workshop tour

The ISSCT Management Workshop started with a two-day pre-workshop factory and field tour (24-25 August) of the Nellikuppam region of Tamil Nadu (100 km south of Mamallapuram). This is one of the oldest sugarcane growing and processing areas in India,



Participants arriving at factory and attending presentation by the General Manager

dating back to 1842. In his presentation, the General Manager of the EID Parry-owned factory, Mr Bharni Kumar, provided an overview of activities that resulted in the evolution and growth of one of the oldest sugarcane processing plants to a modern integrated complex biofactory that produces sugar, ethanol, biogas, bio-earth and cogeneration of electricity from sugarcane biomass. This insightful overview was followed by site visits to the sugarcane milling plant, distillery, cogeneration power plant, refinery and the biogas and bio-earth facilities. An extensive buffet lunch was provided in the mill's dining room.

Day one concluded with a visit to Chidambaram, a 2nd century BC temple which has been attracting pilgrims for over two millennia. Delegates overnighted in Pondicherry.

The second day focused on small-scale farmers. Visits included Parry's Edyenvelli Cane Research Farm (variety, entomological and agronomic trials), an advisory-agronomic supply service centre and a privately operated *Trichogramma* production centre (biological pest control). The field visit provided ample opportunity for the participants to interact with small-scale sugarcane farmers to understand their livelihood, sugarcane productivity improvement issues and their technology expectations. The visit also included inspection of the advanced breeding trial plots and commercial variety evaluation trials and demonstration of various agro technologies on the Parry research farms and small-scale farmers' fields. Participants were also updated on the technology transfer and extension work carried out by EID Parry to small-scale farmers.



Participants at the technology demonstration plots and presentations

Opening session

The technical session of the workshop commenced with the traditional invocation seeking the Almighty's blessing and the Lighting of a Lamp that signifies the willingness to remove ignorance and acquire knowledge. Dr Gopinathan, the Workshop Coordinator, welcomed the delegates.

In his inaugural presentation, Ravindra S. Singhvi, the Managing Director of E.I.D.Parrry (I) Ltd, provided an excellent overview of the agricultural and economic characteristics of the Indian sugar industry and how E.I.D Parrry approach technology transfer to farmers to improve their productivity and profitability. He emphasised that the sustainability of sugar businesses depends on locking in farmers through service and partnership. Parrry's challenge is bringing every farmer within the potential limits of productivity and best in profitability irrespective of the size of the farming enterprise, economic status, education, age and culture. This can only be achieved if farmers are viewed and treated as critical customers.

Dr Frikkie Botha, Commissioner and Chair of the Management and Technology Transfer Section (Australia), in his keynote address focused on the changing sugarcane R,D&E landscape and emphasised the urgent need for delivery to meet stakeholder expectations. World-wide, many production areas are faced with a yield plateau, and in some cases even yield declines. For many areas, this has been evident for more than three decades. To break out of this yield plateau, new and innovative approaches are required. It should be evident that more of the same is just simply no longer good enough. This means RD&E management requires true leadership, forward-thinking, vision, integration of stakeholders, new partnerships, investment in new approaches, and coordination of research to generate a better and secure future.



As with tradition of Parrry hospitality, a cultural event was organised for participants on the evening of the first day of the workshop, with a hearty cocktail and dinner and the opportunity to enjoy watching, and later participating in, traditional Indian classical dances.

Session 1: Delivery of extension to small-scale growers

This session was chaired by David Calcino.

In his paper 'Revisiting the Practice of Extension to Meet the Needs of the Small-Scale Sugarcane Farmers in Mauritius' K Payandi Pillay stressed the importance of a continued evaluation of extension models to ensure alignment with client needs and expectations. The objectives of the extension service to small-scale growers in Mauritius are the reduction in production costs and improving sugarcane yield per unit area. A survey indicated that 46% of growers did not consult anybody for assistance in their cane and husbandry decisions and only a very small portion of farmers received regular extension visits. In light of these recent findings, there is now a realisation that, rather than purely technology transfer, the extension provision should be focused on enabling the farmers to make better decisions.

In his paper 'Management of Sugarcane Crop for Upliftment of Farmers' Dr Krishnamurthy highlighted that the production system for sugarcane is rapidly changing due to mechanisation, marginal environmental conditions and dependence on chemicals. R,D&E institutions need to recognise these important drivers and revamp their programs to ensure that small-scale growers remain sustainable. Examples referred to included broadening of the germplasm base, biocontrol of pests and diseases, soil amelioration and effective extension.

Dr P Soman argued that available water and land are two of the most challenging issues facing small-scale growers. In his presentation 'Drip-fertigation Technology for Sugarcane Agriculture - Field Level Adoption Issues' he suggested that drip irrigation and fertigation are technologies that could contribute significantly to better sugarcane production by small-scale growers. However, in his view, this would only be possible with much more public and private participation in sugarcane R,D&E.

The power of an integrated approach to technology transfer was illustrated in the presentation 'Sweet Results of Geo-spatial Technology Applications in Mitr Phol Sugar – Thailand' by Dr R Saravanan. At Mitr Phol, a sugarcane information and management system (SIMS) was developed. This system is based on remote sensing, a geographic information system (GIS) and global positioning system (GPS). The system is a value planning tool for the linking of field and farmers' information, research technology results and external technology for a one-stop decision-support system.

Session 2: Packing and delivery of technology

The second session was chaired by K Payandi Pillay. The first three papers were from Australia and were presented by David Calcino. In a project led by AJ Benson, it was demonstrated how a series of integrated weed-management workshops facilitated the adoption of on-farm best management practice. This grower-friendly, outcome-focused program utilised multidisciplinary teams and was specifically designed for training cane growers. A key for success is the continual review and updating of the package based on feedback from growers, researchers and industry.

A project led by Drewe Burgess demonstrated how sustainable benefits can be achieved by the implementation of an extension program that incorporates existing research, on-going research, on-farm trials, direct grower involvement and extension/technology transfer, and adoption by the farmers.

David Calcino in his paper on 'Effective Technology Transfer Using a Multidisciplinary Approach: the Development and Extension of Six Easy Steps Workshops in Australia' shared the success of designing an integrated delivery package workshop for growers incorporating best practice with input from scientists, extension officers and growers. This approach built

ownership and enthusiasm and is an example of a successful collaborative extension program in Australia

In his paper on 'Innovative Approach on Prescribed Farming in Sugarcane' A. Jeybal explained how the integration of multiple technologies in a single farm and its demonstration at a farmer's field could lead to cumulative benefits in productivity.

Session 3: Managing innovation and diversification

Ramesh Ponnuswami chaired this third technical session. In the first paper of this session 'Sugarcane R, D & E Innovation: Manage It, Measure It... but don't Destroy It' Frikkie Botha addressed vital issues facing RD&E in sugarcane in comparison to other crops. Research is a high risk endeavour; only 5% of research is successful. This results in stakeholders and industry leaders often preferentially favouring D and E over R because of its higher predictability and lower failure rate. Three components of R,D&E require entirely different management and execution strategies (needs assessment, priority setting, project scoping, monitoring, evaluation of completed project, evaluation of research outputs, program and management review and impact assessment). The traditional industry-owned or industry-funded sugarcane R&D entities can gain much by learning from other commodities and successful multinational R&D companies.

The second paper in this session by Y Tarumoto looked at the evaluation of a new technology for a sugar mill company by using a systems approach. The use of simulation models that incorporated multiple parameters from cane farm to mill in Japan, including regional effects, resulted in better decision making and enabled the industry to increase their productivity on farm and in the mill.

Session 4: Managing technology development and extension

The fourth technical session was chaired by Shivajirao Deshmukh. The first two papers looked at the management of R&D in Iran.

A Rezaei described the history of sugarcane cultivation in Iran and explained efforts of the last 20 years in research and development to stabilise sugar production through an integrated approach in partnership with the sugar industry.

Dr Hamdi shared experience over the past 12 years in the Iran research and extension programs, especially international collaboration, in breeding, soil, water, agronomy and biological pest management.

M Prabhu emphasised the critical role and need for R&D in sugarcane in Karnataka emphasising low productivity under the diverse agro-climatic conditions in this region.

Dr SV Patil described the history of Vasantdada Research Institute and how in partnership with farmers, the industry and academic community success in the research and extension programs resulted in productivity improvements in Maharashtra. He also emphasised the need for further investment in R&D to meet the current and future demands of industry.

U Pliansinchai shared her experience of customer-driven research for effective implementation of technology in the Mitr Phol Sugar group. Mitr Phol research and extension

teams work closely with customers to understand the problems and involve them to make custom tailored solutions with a participatory business approach.

Panel discussion

The technical sessions concluded with a panel discussion on the following topics:

- Identification of research priorities
- How to create a research environment that ensures adequate management while stimulating innovation
- How the future R&D landscape will look taking into account all the new big multinational players
- How can extension be optimised and who is best placed to provide such a service?

The discussion was chaired by Frikkie Botha and the panellists were Jai Gawander (Fiji), David Calcino (Australia), Yusuke Tarumoto (Japan), Payandi Pillai (Mauritius), Pipat Weerathaworn (Thailand) and Shivajirao Deshmukh (India).

The main points arising were:

- The sugarcane industry landscape is changing continuously and the recent increased involvement of major agribusinesses will further enhance the pace of change.
- Stakeholder needs are diverse and complex. RD&E needs to develop a stimulating environment for innovative research.
- Extension models to be revisited to meet customer needs.
- Learnings from other industries and multinationals to be integrated in the management and research program.
- There is an urgent need for attract, train and retain a pool of young talent in sugarcane R,D&E.
- Effective linkages between miller and farmer and their full participation and support are essential for the successful delivery of research results faster and better to ensure profitability and sustainability of all stakeholders

Annual meeting

The workshop was concluded with a short meeting. The format and quality of the workshop was discussed. The participants agreed on the following:

1. The linkage between the management and extension groups does not work well in the mid-term workshop.
2. Too few senior managers attended the workshop. The participants agreed that it would be much better for the management workshop to be held at the main congress when many of the senior R&D managers are present.