Promoting sustainability of sugarcane research, development and innovation in the South African sugar industry

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Abstract
South African sugarcane growers are increasingly subject to factors that impact on their sense of well-being and livelihoods. External factors encompass national land reform initiatives, sustainable farming imperatives and market forces and policies. Internally, escalating energy and other input costs, as well as climatic marginality, have made profitable sugarcane farming increasingly challenging. As such, the diverse South African grower community is under increasing financial pressure and experiencing unprecedented levels of uncertainty about the future. Consequently, the sugarcane research, development and innovation (RDI) environment is required to provide relevant agrotechnical products and services, from high-tech through to ‘back-to-basics’, to a grower cohort that is increasingly discerning and demanding of value. These drivers strongly influence the way in which the South African Sugarcane Research Institute (SASRI) engages in sugarcane RDI on behalf of the Industry. This paper examines and presents discussion on the engagement tactics used by SASRI to promote a broad sense of ownership of the RDI programme and visibility of a strong value proposition. These initiatives are discussed in terms of their fundamental reliance on an integrated research, knowledge management and extension system and the knowledge exchange between grower and specialist that it enables. Furthermore, strengthened partnerships between SASRI and Industry entities with economics expertise, including the South African Canegrowers’ Association, are discussed as a means to enable development of a credible RDI value proposition. The importance and value of such external partnerships in promoting the delivery of relevant RDI outcomes will be further illustrated by: (a) a joint venture for small-scale grower extension that exists between SASRI and provincial government; and (b) a regional partnership in which shared responsibility amongst customers, growers, millers, civil groups and RDI providers has promoted the implementation and adoption of sustainable farming practices. Numerous challenges remain for the SASRI RDI programme, particularly with regard to effective service provision to small-scale and emerging large-scale growers and the promotion of technology adoption, which are to be addressed through ongoing dialogue and a culture of continuous improvement.

Key words Research, technology development, knowledge exchange, stakeholder engagement tactics, ownership, value proposition

SUGARCANE CULTIVATION IN SOUTH AFRICA

Biophysical environment
In addition to an arguably marginal average annual rainfall of approximately 1000-1300 mm, the South African sugar growing belt (Fig. 1A) is characterised by highly diverse soils, with clay contents and pH values ranging between less than 10% and greater than 60% and less than 4 and greater than 8.5, respectively (Anon. 1999). Many parts of the southern coastal (0 to ~400 m above sea level) and hinterland (~400 to ~600 m above sea level) regions are characterised by steep topography (Figure 1B), which presents a further biophysical challenge.

Along the eastern national border, the growing regions of South Africa, Swaziland and Mozambique are contiguous (Fig. 1A), which presents a number of biosecurity challenges. Despite good cooperation amongst the sugar industries of these nations, a number of new pests and diseases have emerged recently: (a) *Fulmekiola serrata* (Thysanoptera: Thripidae) (sugarcane thrips) in 2004; (b) maize streak virus (MSV-A, subtype MSV-A1) and a new species of *Saccharum* streak virus (mastrevirus) in 2007; (c) a new species of rust, *Macroarpoxys fulva* sp. nov. (Pucciniales) (tawny rust) in 2009; and (d) *Sipha flava* (Hemiptera: Aphididae) (yellow sugarcane aphid) in 2013. Two further potential biosecurity threats are of major concern to the Industry: (a) *Chilo sacchariphagus* (Lepidoptera: Crambidae) that is present in the central and northern
regions of the Mozambican industry; and (b) incidences of *Puccinia kuehnii* (Pucciniales) (orange rust) that have been reported in Sierra Leone, Côte de Ivoire and Cameroon.

In addition to these recently emerged and potential biosecurity challenges, the sugarcane in the Industry is subject to the negative effects of a suite of established pathogens (e.g. *Leifsonia xyli* subsp *xyli* [Actinomycetales], *Xanthomonas albilineans* [Xanthomonadales], *Puccinia melanocephala* [Pucciniales], *Sporisorium scitamineum* [Ustilaginales], sugarcane mosaic virus, sugarcane yellow leaf virus, Fiji leaf gall virus) and pests (e.g. *Eldana saccharina* [Lepidoptera: Pyralidae], *Sesamia calamistis* [Lepidoptera: Noctuidae]). Of these, *E. saccharina*, the African sugarcane borer, exerts the most significant negative effect on the Industry, resulting in estimated direct and indirect losses of approximately USD 62 million per annum.

**Grower communities**

Socio-political and socio-economic factors add further complexity to South African sugarcane agriculture, primarily as a result of socio-economic inequalities that persist from the past. The Industry promotes land ownership that is representative of national demographics and has contributed to the transfer of 22% of freehold land to previously disenfranchised sectors of the population (Anon. 2015). To-date, approximately 74,600 ha of freehold land have been transferred and a further 130,000 ha remain under claim through official government land restitution processes. The Industry also engages strategically with government in land post-restitution and post-redistribution processes to support sustainable production by new entrant growers.

The South African sugarcane grower cohort consists primarily of out-growers, with estates operated by milling companies (miller-cum-planter estates) contributing only approximately 7.9% of production (as per 2014/2015 sugarcane production data). The out-grower community comprises commercial-scale (large-scale) growers farming on freehold land, small-scale growers farming under customary (tribal) land tenure and group-farming schemes. A total of 22,500 growers were registered in the 2014/2015 season of whom 14,263 delivered 17,755,537 tonne of cane. In 2014/2015, the large-scale grower community comprising 1,344 growers, including miller-cum-planter, contributed 91.2% of total sugarcane production, while the 21,906 registered small-scale growers, of whom 12,507 delivered cane in the 2014/2015 season, were responsible for the remainder.
Economics and sustainability

South African sugarcane growers have recently faced unprecedented increases in input costs, for example: 45% between 2003 and 2008 primarily as a result of increased fertiliser and fuel costs (Baiyegunhi and Arnold 2011); and for rain-fed farms, 21% between 2012 and 2013 as a result of a 51% increase in labour costs (Singels et al. 2015). During the same period, labour costs for irrigated farms increased by 36%. Average increases in electricity tariffs of 22% per annum between 2008 and 2015 (Parsons et al. 2015) have placed an additional strain on the profitability of South African sugarcane farming enterprises.

Over several years, a group of progressive South African sugarcane growers and millers, working with the South African Sugarcane Research Institute (SASRI), WWF-South Africa, the Wildlife and Environment Society of South Africa and other Industry stakeholders, developed a framework to guide legally-compliant sustainable sugarcane farming practice. This initiative arose from an awareness of the increasing demands from consumers, regulatory groups, environmental lobbyists and major industrial customers that sugarcane agricultural enterprises in South Africa adhere to socially- and environmentally-responsible farming principles. The resulting framework, named the Sustainable Sugarcane Farm Management System (SUSFARMS®), which serves as both a best practice guide for growers and an important extension tool, provides guidelines for farm management practices that yield environmental, social and economic benefits to all stakeholders and role-players. SUSFARMS® also provides growers with a self-assessment tool to facilitate their monitoring of progress, identification of areas for improvement and compliance with relevant legislation.

Despite recognition of SUSFARMS® as an enabler of sustainable farming better practice, the favour with which growers and, indeed, the South African Cane Growers’ Association view the system has not been unequivocal (Hurly 2013). Grower reservations with SUSFARMS® implementation stem largely from the low-income environment prevailing in the Industry. Consequently, while the social and environmental benefits of adhering to SUSFARMS® are clear, the economic benefits on grower prosperity appear to be less so.

SUGARCANE RESEARCH, DEVELOPMENT AND INNOVATION (RDI) IN SOUTH AFRICA

The South African Sugarcane Research Institute (SASRI), which is a division of the South African Sugar Association (SASA)¹, is the primary provider of agro-technical services and products for sugarcane agriculture in South Africa and, by agreement, for six other members of the Southern African Development Community (SADC)².

The primary objectives of SASRI are to:

- develop and deliver a minimum of one new sugarcane variety per annum that provides increased economic returns for all sectors of the SA sugar industry;
- undertake research and provide specialist services that advance nutritional, agronomic and engineering practices and pest and disease control measures;
- generate and implement new ideas for enlarging the scope of sugarcane agriculture, including alternative uses and the delivery of alternative high-value products, with a view to sustaining the Industry into the future; and
- ensure the transformation of tacit knowledge and research outcomes into explicit knowledge and technology products.

To achieve these objectives, SASRI: (1) maintains a differentiated portfolio of research, technology development and knowledge exchange projects that are managed within four research programmes (Variety Improvement, Crop Protection, Crop Performance and Management, Systems Design and Optimisation) and the Knowledge Management Unit, which is a SASRI unit that functionally bridges the research and extension environments to promote the research-knowledge-extension continuum necessary for effective knowledge exchange with stakeholders; and (2) ensures close alignment amongst research and technology development activities, knowledge management and extension services.

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¹ SASA is an entity incorporated by statute, in terms of the Sugar Act of 1978 of the Republic of South Africa (Government Gazette No. 6419 on 27 April 1979).
² Currently SADC has a membership of 15 States, namely: Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.
DRIVERS OF SASRI INNOVATION

The SASRI RDI programme provides agro-technical solutions to growers that are tailored to suit key Industry features, including the challenging growing conditions, pest and disease pressures and biosecurity incursion threats, as well as the diversity of the grower cohort. Layered over this are escalating input costs, which necessitates that SASRI’s agro-technical solutions enable growers to improve the bottom line of their enterprises. Hence, SASRI must deliver innovations that not only address the bottom line of grower enterprises but also the triple bottom line of the Industry, in which social and environmental issues are addressed along with the financial.

The RDI model

Mechanisms to facilitate the relevance and promote stakeholder ownership of the programme are implemented at two levels, viz. portfolio composition (Fig. 2A) and individual project planning (Fig. 2B). The RDI model was developed to ensure that both the portfolio and the individual projects composing it deliver innovations that: (a) enable growers to enhance the sustainability of their farms; (b) minimise current and potential future threats to Industry sustainability; and (c) improve the quality of services provided by SASRI to the Industry.

Fig. 2. The SASRI Research, Development and Innovation (RDI) Model.
RDI portfolio development

The framework for the SASRI RDI programme is provided by a 5-year strategic plan developed by a SASRI oversight committee comprising grower and miller leaders (industry Principals) elected by their peers (Fig. 2A). The plan is developed through an interactive workshop process facilitated by an independent third party. The plan describes key performance areas and associated strategic objectives and performance indicators against which SASRI performance is benchmarked. Importantly, the plan forms the foundation upon which the SASRI annual RDI programme is constructed.

Promoting Industry-level ownership

Each year, the grower and miller leadership committee considers and approves the RDI portfolio based on several criteria, including: (a) potential for return on the quantum of Industry investment; (b) alignment with the 5-year SASRI strategic plan; (c) relevance to the annual strategic objectives of each of the two Industry sectors and those of SASA; and (d) the potential to deliver innovations to sustain the constituencies the committee members represent. After implementation, progress is monitored by the committee through quarterly reporting from SASRI management and, after five years, a thorough analysis of achievements benchmarked against key performance indicators. These processes foster active engagement that leads to a proprietary interest by the Industry leadership in the RDI programme.

The Industry annually subjects one of the four research programmes to independent expert review. The review terms of reference encompass assessments of whether the programme is poised to meet established key performance indicators, remains aligned with programme-specific strategic objectives and is adding value to the Industry. The review panel of experts is also tasked with benchmarking the science and technology against international standards. In addition to engaging with SASRI scientific staff, closed-door discussions are arranged amongst the review panel, extension specialists and growers. The process results in an objective third-party assessment of the performance of the programme, which, together with a SASRI management response to the recommendations of the review panel, is submitted to the grower and miller leadership committee for consideration. These external expert reviews provide assurance to the Industry on the quality, relevance and value-add of the RDI portfolio thus engendering confidence.

Participation by end-users

An essential feature of the RDI model (Fig. 2) is the participation, wherever possible, of the innovation end-user in the planning of the individual projects comprising the portfolio. Where this is not practicable, projects are designed through consultation with end-user representatives, particularly the SASRI Extension Services. Although the end-users are primarily members of the sugarcane grower community, other innovations are specifically intended to meet the internal needs of SASRI to: (a) improve the quality of services provided to the Industry e.g. the SASRI Fertiliser Advisory Service, SASA crop forecasting service; or (b) ensure that the science and technology deployed remains abreast of international sugarcane RDI developments.

The portfolio comprises projects that span the entire RDI value chain, from research to knowledge exchange (Fig. 2B). To ensure focus on the ultimate end-user, a knowledge exchange plan is mandatory for each project, in which the following are clearly articulated: (a) nature of intended research outputs (e.g. decision-support technologies, best management practices, laboratory processes or methods); (b) target end-user (e.g. large- or small-scale growers, SASRI Extension Services); and (c) activities to facilitate knowledge exchange amongst the target end-users and SASRI specialists (e.g. on-farm demonstration trials, grower study groups, Extension Specialist training workshops). Where research is distant from immediate application (Fig. 2B), a retained focus on the end-user ensures that the research plan is designed to deliver a usable product.

The mechanism to enable participation by Industry role-players, particularly growers, in the identification of issues for potential entry into the RDI programme is well-established through the activities of ten regional Research, Development and Extension Committees which operate throughout the SA sugarcane growing belt (Figs 1A, 2A). The committee members are drawn from the local grower and miller communities and the regional SASRI Extension and Biosecurity staff. Representatives gather annually for an intensive workshop with SASRI management and specialists to identify, discuss and prioritise the key regional issues that affect sustainable sugarcane cultivation. The workshop outcome is a list of priority issues on which a deep mutual understanding amongst all stakeholders has been achieved. This list guides the RDI programme, both in the formulation of projects for entry into the annual portfolio and also in crafting the communication strategy for the year.
Promoting adoption of innovations

Understanding and managing the drivers of technology adoption are central to the ability of SASRI to add value and contribute to industry sustainability. Consequently, the adoption process has become a topic of research within the RDI programme. The knowledge gained assists in developing the means to manage the adoption process more effectively.

Stakeholder involvement in the design of the RDI portfolio and individual projects, together with targeted annual communication and engagement strategies, are intended to contribute to stakeholder ownership of the innovations and, hence, promote adoption. However, it is recognised that the active facilitation of adoption needs to go much further and SASRI is embarking on initiatives to promote deeper engagement with growers. Thus far, partnering with growers in testing specific technologies on their farms with support from SASRI specialists has proven successful in promoting technology adoption within specific grower communities. For example, SASRI partnerships with growers, which demonstrated the economic rewards of chemical ripening in the Mpumalanga province of South Africa, resulted in a 47% increase in the area of cane ripened in that region, from approximately 26,000 ha in 2010 to approximately 38,000 ha in 2013 (van Heerden et al. 2015). A further advantage of this approach is the learning by SASRI specialists of innovations developed by individual growers, which may then be shared with other Industry members. Expansion of this participative research approach is to be pursued vigorously into the future.

During the combined Agronomy and Agricultural Engineering Workshop of the International Society for Sugar Cane Technologists convened in South Africa during 2015, a workshop session was devoted to gathering the views of participants regarding the key drivers of adoption. Emerging as a key factor was economic considerations, encompassing standard metrics such as return-on-investment and cost-to-benefit ratio. This view is supported by SASRI experience; for example, the recent momentum gained in grower adoption of chemical ripening technology may be ascribed to explicit reporting of economic benefits, which was complemented by the participative research approach utilised. To consolidate the approach, a versatile tool to enable the consistent and accurate reporting to growers of the economic benefits of SASRI innovations is currently under development.

Enablers of innovation

With the support of the Industry, SASRI has established organisational structures and systems that support innovation. The Industry leadership recognise that innovation is founded on three pillars, viz. research, knowledge management and extension. Consequently, SASRI is in the enviable position of having fully integrated research, knowledge management and extension functions and, more recently, a reintegrated biosecurity specialist network. This high-functioning research-knowledge-extension-biosecurity continuum enables the two-way flow of information between specialists and stakeholders to ensure that innovation is relevant to the needs of the end-user.

The complex issues faced by South African sugarcane growers require solutions that are trans-disciplinary, requiring an integration of contributions from a variety of disciplines and stakeholder participation. Consequently, SASRI has adopted a customised matrix structure in which discipline-specific resources are managed vertically and the fully-projectised RDI portfolio is managed horizontally across four research programmes and the SASRI Knowledge Management Unit. This configuration enables the relatively rapid establishment of projects in response to specific stakeholder needs and Industry strategic imperatives.

RDI value proposition

The sustainability of the RDI programme into the future is partly supported by the sense of ownership that has been engendered amongst stakeholders through the mechanisms above. However, due to the low-income environment prevailing in the Industry and which is expected to persist in the medium-term, it is clear that a strong value proposition, supported by specific metrics, is an increasing necessity to inform RDI investment decision-making by industry Principals. However, due to the diversity of products and services provided by SASRI, deriving such a single metric to encompass the entire value-add is a complex and difficult process.

SASRI recently collaborated with individual grower and miller members of the SASRI oversight committee to calculate the value contributed to the Industry by the major product of Institute, viz. improved sugarcane varieties. Accounting for the development levy paid by growers, the analyses revealed that the increased net profit that growers may accrue through planting of new varieties lies in the range of USD 90-$230 per hectare. The success of this approach may be attributed to the high-level financial skills prevalent amongst the Industry leadership, as well as the partnering between SASRI and the
Industry it serves. Determination of the value to the Industry of other major SASRI products is to be pursued via this collaborative approach into the future.

Further metrics to demonstrate the value SASRI brings to the Industry will become increasingly available as SUSFARMS\textsuperscript{TM} implementation by growers gains momentum. As part of the system, growers monitor their progress towards sustainable farming by an integrated SUSFARMS\textsuperscript{TM} Progress Tracker\textsuperscript{TM} spreadsheet tool. The tool requires growers to record progress towards implementation of the better management practices developed and recommended by SASRI. As such, growers will have the option to make their data available to SASRI to enable the measurement of the extent of adoption of SASRI innovations.

Empowering small-scale sugarcane growers

Language differences\textsuperscript{3}, variable literacy levels and cultural differences play a significant role in guiding the SASRI knowledge exchange strategy. In addressing these challenges, it is recognised that the annual stakeholder engagement plan requires careful crafting, necessitating consideration of the most appropriate manner of interaction required to facilitate effective knowledge exchange. Due to the complexity involved, this remains a growth area for the institute and is one which is receiving increasing attention.

Engaging with grower diversity

Due to the diversity in the vernacular used amongst stakeholders, regular publications are issued in the three main languages of the South African sugar belt, viz. Afrikaans, English and isiZulu. A suite of publications, with differing levels of technical content are also available to address the diverse readership of the industry, as well as the different knowledge and skills levels. Apart from printed publications, videos serve as an excellent medium for sharing best practice. SASRI maintains a suite of training videos in both English and isiZulu with the intent of delivering a dynamic and visually-pleasing product that attracts and retains the interest of the target end-user.

With 89% of the rural population in South Africa having access to radio, this medium is used very successfully to broadcast agronomic advice to isiZulu-speaking growers. SASRI specialists present regular programmes on ten community radio stations and a public broadcaster. The popularity of this medium is high, demonstrated by the frequent phone calls received during the live broadcasts.

Regional grower days and face-to-face interactions are a regular feature of stakeholder engagements and provide regionally-focused advice, sharing of experiences and personal contact opportunities amongst SASRI specialists and growers. These forums develop trust relationships that are critically important for effective knowledge exchange and technology adoption. Cultural differences are respected through the observance of the correct protocols during contact events.

Empowerment in partnership

In addressing the needs of the small-scale grower community, SASRI has established an invaluable partnership with the government of the KwaZulu-Natal province of South Africa. This long-standing collaboration with the Department of Agriculture and Rural Development provides joint extension services to the small-scale sugarcane grower community in the province. Under the formal partnership agreement (extension venture agreement), the provincial network of government extension specialists has full access to SASRI technology, knowledge resources, training materials and mentorship programmes, while SASRI, in turn, receives a grant from government to cover a significant portion of the costs required to support the SASRI team of specialist staff that are devoted to small-scale grower extension. Through this mechanism, the reach of SASRI technology into small-scale grower communities is vastly expanded, while government extension specialists are empowered in sugarcane agriculture knowledge and technology. Also participating in this partnership are other essential provincial stakeholders in the sugar industry, including milling companies, local municipalities, suppliers, financial institutions and tribal authorities.

\textsuperscript{3} The Republic of South Africa has eleven official languages: Afrikaans, English, Ndebele, Northern Sotho, Sotho, Swazi, Tsonga, Tswana, Venda, Xhosa and Zulu.
Much of the success of this small-scale sugarcane grower extension venture agreement may be ascribed to the rigour with which the 5-year renewable agreement and annual extension plans are formulated. The clear delineation of the roles and responsibilities of the partners has allowed a strong trust relationship to develop between SASRI and provincial government, as well as a unified vision for the provision of effective extension services to the community.

Much remains to be done to enhance the quality of extension services to the small-scale grower community. In particular, gaining a clear understanding of the agro-technical needs of the more than 20,000 small-scale growers is an area of growth for SASRI. Due to the socio-economic and cultural factors that impact on the needs of the sector, SASRI recognises that it will need to partner with institutions that have the necessary anthropological and sociological wherewithal and capacity to unpack the complexity of factors involved.

CONCLUSIONS

Farming sugarcane sustainably under the arguably marginal conditions of the South African sugar belt is demanding and the grower community is beset by ongoing and emerging challenges, including spiralling input costs, new sugarcane pests and diseases and soils that need continuing remedial action to retain fertility. Working hand-in-hand with growers to uncover solutions to these and other problems is the major focus of the SASRI RDI programme. The institute is well-placed to do so, given the seamless integration of research, knowledge management, biosecurity and extension functions. Working closely together, SASRI researchers, extension and biosecurity specialists and knowledge management practitioners engage with growers to develop a deep understanding of their needs, as well as to uncover the innovations that growers themselves have developed and implemented to increase efficiencies and profitability. It is this knowledge base that guides the development, direction and execution of the SASRI annual RDI programme and knowledge exchange initiatives.

The phrase "There is nothing permanent except change", attributed to Heraclitus, may have become something of a cliché but, nevertheless, it still rings true for the South African sugar industry, as it continuously overcomes significant challenges; past, present and future. Looking to the past, it becomes clear that the highly functional partnership between SASRI and the South African grower community will enable the future to be faced with confidence and optimism.

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Promouvoir la durabilité de la recherche, le développement et l’innovation dans l’industrie sucrière en Afrique du Sud

Résumé. En Afrique du Sud les producteurs cannoirs sont de plus en plus soumis à des facteurs qui ont un impact sur leur sentiment de bien-être et leurs moyens de survie. Les facteurs externes comprennent les initiatives nationales de réforme agraire et les impératifs des forces du marché et les politiques pour une agriculture durable. À l’opposé, l’escalade des prix de l’énergie et autres intrants avec des conditions climatiques marginales, ont considérablement réduit la rentabilité de la culture cannaire. Ainsi, les différentes composantes de la communauté agricole sud-africaine, sont sous une pression financière croissante et opèrent dans un climat d’incertitude sans précédent quant à leur avenir. Par conséquent, le milieu de la recherche, de développement et de l’innovation (RDI) dans la canne à sucre est appelé à fournir de produits et services agro-techniques appropriées, de ‘hi-tech’aux basiques, à une communauté d’agriculteurs, qui devient de plus en plus exigente. Ces exigences ont une forte influence sur l’engagement de l’Institut sud-africaine de recherche de la canne à sucre (SASRI) dans un RDI pour l’industrie sucrière. Cet article examine et présente les discussions sur les moyens utilisées pour engager SASRI à promouvoir un sens d’appartenance au programme de RDI et plus de visibilité pour une proposition à forte valeur.
Ces initiatives sont discutées en fonction de leur dépendance fondamentale sur une recherche intégrée, une gestion des connaissances et un système de vulgarisation qui permet le transfert efficace de connaissances entre l’agriculteur et le spécialiste. De plus, le renforcement des partenariats entre SASRI et les autres entités de l’industrie avec une expertise en économie, incluant l’Association des producteurs canniens de l’Afrique du Sud (South African Canegrowers’ Association), sont examinées afin de permettre le développement d’une proposition valable et crédible pour le RDI. L’importance et la valeur de ces partenariats externes pour permettre le RDI de produire des résultats appropriés seront aussi illustrées par: (a) un projet conjoint de service de vulgarisation pour les petits agriculteurs qui existe entre SASRI et le gouvernement provincial; et (b) un partenariat régional dans lequel une responsabilité partagée entre les clients, les producteurs, les usiniers, des groupements civils et des responsables de RDI a favorisé la mise en œuvre et l’adoption des pratiques agricoles durables. Le programme RDI de SASRI reste toujours confronté à de nombreux défis, particulièrement pour la prestation d’un service efficace aux petits agriculteurs et les gros producteurs émergents et la promotion de l’adoption de technologie, qui doivent être abordés à travers un dialogue régulier et une culture continue de mieux faire.

Mots-clés: Recherche, développement de technologie, transfert de connaissances, techniques utilisées pour engager les acteurs concernés, le sens d’appartenance, proposition de valeur

Promover la sustentabilidad de la investigación, el desarrollo y la innovación en caña de azúcar en la industria azucarera en África del Sur

Resumen. Los cañeros sudafricanos están constantemente sujetos a factores que impactan su sentido de bienestar y forma de vida. Factores externos que abarcan iniciativas nacionales de reforma de tierras, imperativos de agricultura sustentable, y políticas y fuerzas de mercado. Internamente, escalada en el costo de la energía y otros insumos, así como marginalidad climática, ha hecho que el cultivo rentable de la caña de azúcar se enfrente a constantes retos en aumento. Así, la diversidad de cañeros sudafricanos está bajo una presión financiera en aumento y experimentando niveles sin precedentes de incertidumbre respecto al futuro. En consecuencia, el conjunto de la investigación, el desarrollo y la innovación en caña de azúcar (RDI, por sus siglas en inglés) necesita proveer productos y servicios agro-técnicos relevantes, desde altas tecnologías hasta el "el regreso a lo básico", a todos los cañeros que son cada vez más perspicaces y valen un valor agregado. Estas motivaciones influencian enormemente la manera en que el Instituto de investigaciones Azucareras de Sudáfrica (SASRI, por sus siglas en inglés) se involucra en el RDI azucarero en nombre de la industria. Esta presentación examina y presenta discusiones en el involucramiento táctico usado por el SASRI para promover un amplio sentido de propiedad del programa de RDI y la visión de una propuesta de gran valor agregado. Estas iniciativas son discutidas en términos de su dependencia fundamental en una investigación integral, conocimiento empresarial y un sistema de extensión y conocimientos compartidos entre los cañeros y los especialistas que lo hacen posible. Aún más, refuerza la alianza entre el SASRI y las entidades industriales con experiencia económica, incluyendo la Asociación de Cañeros de África del Sur, analizado como una manera de propiciar el desarrollo de una propuesta de valor creíble de la RDI. La importancia y el valor de dicha alianza para promover la entrega de RDI relevante será mejor ilustrada con: (a) una asociación tipo joint venture para cañeros de pequeña escala que existe entre SASRI y el gobierno provincial; y (b) una alianza regional en dónde se compartan responsabilidades entre clientes, cañeros, industriales, grupos civiles y proveedores de RDI como promotores de la implementación y adopción de prácticas agrícolas sustentables. Numerosos retos quedan aún para el programa de RDI del SASRI, particularmente en relación a los servicios efectivos proporcionados a los pequeños cañeros y a los grandes cañeros emergentes y en la promoción para la adopción de tecnología, que deberían de ser direccionadas a través de un diálogo en proceso y a una cultura de mejoramiento continuo.

Palabras clave: Investigación, desarrollo tecnológico, intercambio de conocimiento, tácticas de compromiso accionario, propiedad, proposición de valor