



SASRI Milestones

Since its inception in 1925, the mission of the South African Sugarcane Research Institute (SASRI) has been to accomplish cutting edge and problem-solving research geared towards the agricultural sustainability of the South African sugar industry. The establishment of SASRI (known then as the South African Sugar Association Experiment Station) was prompted by concerns of the prevailing disease threats, and also as a consequence of sage advice regarding the value of a sugarcane industry-specific experiment station. The institute today boasts custom-developed research facilities and a team of internationally recognised scientists and accomplished technology exchange specialists, ideally placed to deliver valuable solutions to all South African sugarcane growers.

ABOVE: The South African Sugarcane Research Institute situated in Mount Edgecombe.
RIGHT: Director, Dr Carolyn Baker and Senior Scientist (Biotechnology), Dr Sandy Snyman.



PLANT BREEDING

One of SASRI's most notable research innovations was the discovery in the mid-1940s by Dr Peter Brett that viable pollen could be generated in South Africa by manipulating temperature and day length of parent sugarcane plants to induce flowering and facilitate crossing. This breakthrough enabled the development of a comprehensive plant breeding and selection programme resulting in the release of elite N sugarcane varieties, adapted to the diverse range of agroclimatic zones in the industry. These locally developed and selected varieties, with improved yield potential and greater pest and disease resistance traits enabled the spread of sugarcane agriculture in KwaZulu-Natal and Mpumalanga.

Early investigation into tissue culture in the late 1990s and early 2000s to enable production of high volumes of true-to-type and disease free plants resulted in the registration of NovaCane® - SASRI's first trademark describing the micropropagation process. Its role in enabling production of sufficient quantities of newly released varieties from the plant breeding programme has culminated in the construction of a state-of-the-art micropropagation facility at SASRI that will be opening in 2016.

SOILS AND NUTRITION

In the 1940s, a soil classification system described by Dr BE Beater served as the basis for the volumes of research into crop nutrition that have emerged since then. Around the same time, a method for analysing leaves to establish the nutritional status of sugarcane was determined, and from this sound foundation, sugarcane-specific recommendations for application of fertilisers were formulated. This enabled the development of the Fertiliser Advisory Service (FAS) in the 1950s – a service that has grown to serve not only the South African industry, but several other countries in SADC.

UNDERSTANDING CROP PHYSIOLOGY

During these early years industry support for rigorous and scientific agricultural research grew, enabling expansion of SASRI specifically in respect of agronomy in the 1960s. This early investment in crop physiology research, in association with systems agronomy, paved the way for the development of Canesim®, a simulation model that has played a considerable role in assisting in industry crop forecasting.

Around 2008, the value of optimising RV yields through the correct use of chemical ripeners was revived and a drive to enhance growers' understanding of the way that ripeners work, and to ensure correct application of chemicals, culminated in the design and development of a simple and effective in-field calculator (PurEst™) for gauging whole-stalk juice purity to enable correct ripening decision-making.



PEST AND DISEASE MANAGEMENT

In the 1970s expansion in the Pathology programmes at SASRI saw the birth of an integrated approach to understanding pest and disease management. This integrated pest management (IPM) approach is founded on the understanding that a pest will never be eradicated by any single technology or practice, but that damage can be contained through coordinated use of a range of tools.

In 2015, registration of 'new-age' and environmentally friendly insecticides to combat eldana, and their judicious use in approved spray programmes to reduce development of insect resistance, has proved to be of significant value to the industry. Even though considerable emphasis continues to be placed on eldana management, SASRI's focus on all diseases and pests has intensified. The recent incursion of a new and previously unknown-to-sugarcane rust is a constant reminder to remain on the alert. This disease was identified as tawny rust, and its isolation and identification here in South Africa represents a first for the sugarcane world.

A significant milestone was achieved in 2015 when the former regional local pest, disease and variety control structures were regulated to become part of SASRI core, resulting in considerable expansion

of SASRI operations. Closely aligned with SASRI's well organised regional Extension service, this newly structured pest and disease service represents a modern approach to managing biosecurity that will serve to protect the industry into the future.

COLLABORATIVE INITIATIVES

Although cooperation has always been a key feature associated with SASRI's activities, enhanced emphasis on this aspect from the 1990s onwards resulted in a number of international and national collaborations that have enhanced research capacity, as demonstrated by the successful association with the International Consortium of Sugarcane Biotechnologists (ICSB) and the Institute for Plant Biotechnology at the University of Stellenbosch.

This cooperative approach was mirrored in SASRI's extension services. The middle to late 1990s saw the establishment of a valuable partnership with the KwaZulu-Natal provincial Department of Agriculture to deliver sugarcane technology support to the industry's large number of small-scale growers. Ongoing collaboration since then has resulted in the roll out of a series of successful projects all aimed at sustainability of the small-scale sector.



SUSTAINABLE AGRICULTURE

With industry sustainability becoming a dominant theme in recent times, publication in 2002 of the Standards and Guidelines for Conservation and Environmental Management in the Sugar Industry heralded awareness of the growing concern for sustainable sugarcane production. This culminated in the development of a farm management system, SUSFARMS®, designed to encourage sustainable sugarcane production through the implementation of better management practices (BMPs).

Now in its 91st year, SASRI has a proud history of contributing to the sustainability of the South African sugar industry, made possible through its commitment to scientific rigour and in response to the enduring support by the sugar industry.



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