

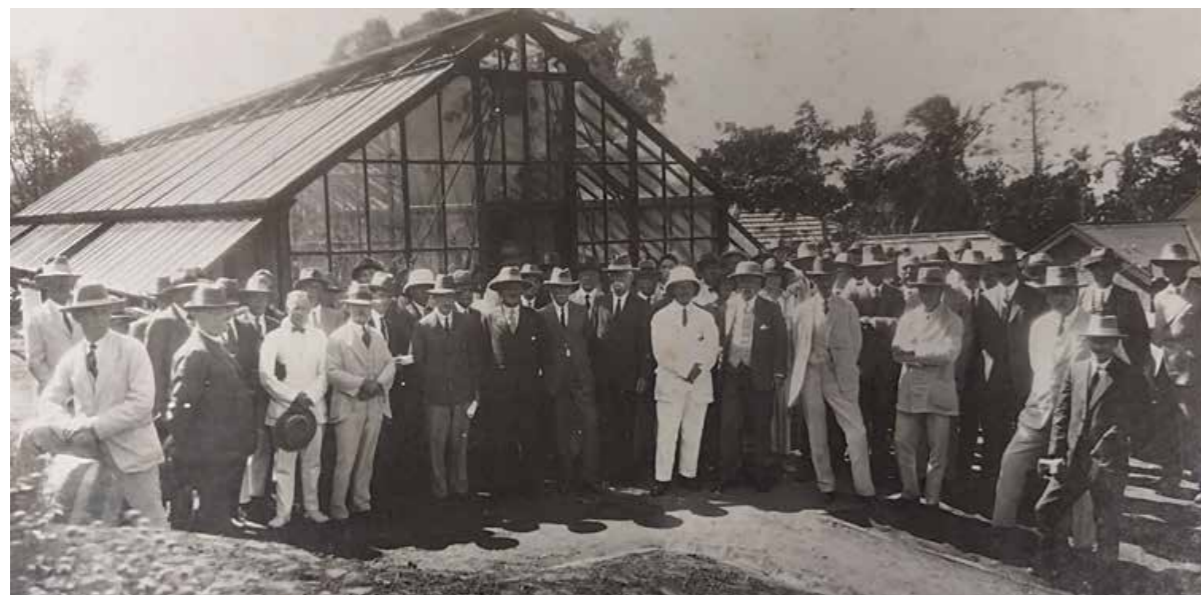
SOUTH AFRICAN SUGARCANE QUARANTINE FACILITY CELEBRATES ANNIVERSARY

Aimee Koch

It has been forty years since the South African sugarcane quarantine facility moved from the Durban Botanical Gardens to the South African Sugarcane Research Institute (SASRI) in Mount Edgecombe. The anniversary of this momentous event was celebrated on Friday 18 October 2024 with a gathering of staff, both current and retired, all of whom played a role in the quarantine facility (Fig.1).



ABOVE: Figure 1. SASRI staff gathered to celebrate the 40th birthday of the quarantine glasshouse.



ABOVE: Figure 2. Opening of the first sugarcane quarantine glasshouse, 14 April 1926, situated in the Botanical Gardens in Durban.

History of sugarcane quarantine

In 1914, the Natal Sugar Association obtained a piece of land, where Kingsmead stands today, to be used as a quarantine/experiment station for new cane varieties. The outbreak of Sugarcane mosaic virus (SCMV), which originated from some varieties from Argentina, spread rapidly throughout the industry. Following this and other serious disease outbreaks troubling the sugar industry SASRI built a quarantine glasshouse in the mid-1920s, situated in the Durban Botanic Gardens. It was opened on 14 April 1926 (Fig. 2) by Mr F Piccione (former chairman of the Sugar Association). The custody of the glasshouse was handed over to Dr HH Storey (Government Mycologist and Entomologist).

Over 1200 sugarcane varieties were imported between 1926 and 1984 before the structure required replacement. It was decided that a modern quarantine facility should be built at SASRI, in Mount Edgecombe, under close supervision by experienced sugarcane pathologists, Roger Bailey and Roger Bechet. The facility was also designed with innovative features for secure quarantine and stringent quarantine procedures. The new glasshouse was opened on 18 October 1984 (Fig. 3) and aptly named the A McMartin Quarantine Glasshouse in honour of Dr A McMartin, a former pathologist and director of SASRI from 1950 to 1958.

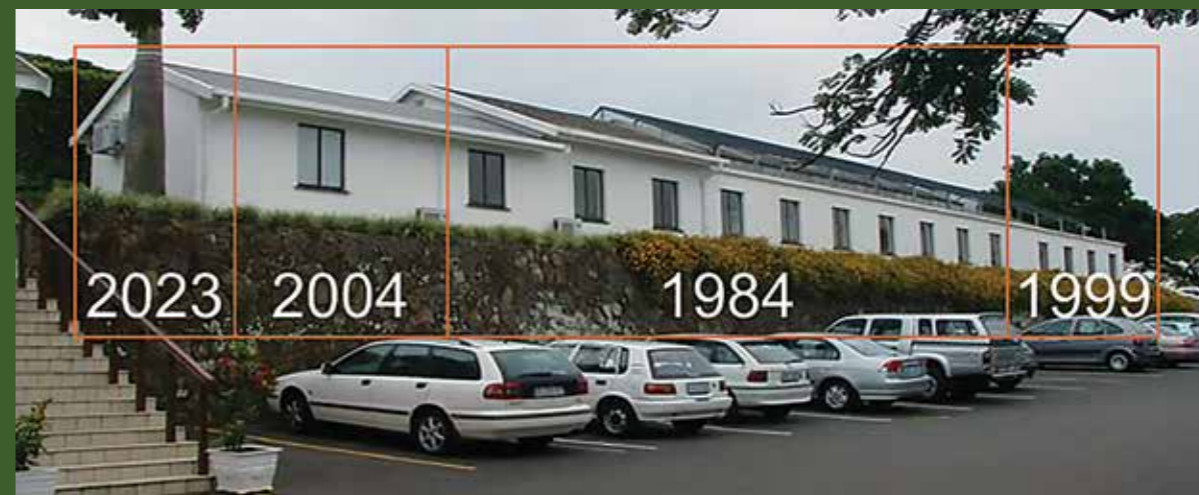
Modifications and improvements have been made to the quarantine glasshouse to ensure sufficient space to



ABOVE: Figure 3. The opening of the A. McMartin Quarantine Glasshouse on 18 October 1984 by Dr A McMartin and Dr Gerald Thompson (Director). Looking on from left to right, Glen Dewey, Graham Shuka, Steve Booysen, Shirley McCollum, Peter Brett, Peter Fox, Roger Bailey, Barry Wilson, John Boyce, P Bullock, G Bax and Ian Smeaton.



ABOVE: Figure 4. The addition of four growth cubicles to the quarantine glasshouse in 1999.



ABOVE: Figure 5. A summary of the current Quarantine facility indicating all the additions and modifications up to 2023. In 1999 an additional 4 glasshouse cubicles were added, in 2004 the tissue culture laboratory and growth room were added and finally in 2023 the tissue culture growth room was subdivided to include a slow growth room to aid the long-term maintenance of cultures.



ABOVE: Figure 6. Former quarantine pathologists: Tania van Antwerpen (left), Roger Bechet (centre bottom) and Roger Bailey (right). Former quarantine glasshouse supervisor Solen Subramoney (centre top).

enable the safe importation of sugarcane varieties to add to the selection of parent varieties used for crossing, and to ultimately increase the gene pool. The SASRI breeding programme is the basis for improved, higher sucrose-yielding and disease-resistant varieties for the industry. The quarantine facility has a total of 10 growth cubicles (an additional four added in 1999, Fig.4) as well as a tissue culture laboratory and tissue culture growth room (added in 2004) to aid in disease elimination through meristem culture. The meristem research, lead by Dr Sumita Ramgareeb, in the quarantine facility resulted in the adjustment of import and export procedures to enable SASRI to eliminate diseases such as SCMV and SCYLV as well as other potential unknown viral diseases. This has enabled SASRI to clean imported varieties from known pathogens, so that disease-free plants can be used in the breeding programmes. SASRI also now exports disease-free tissue culture South African (N) varieties instead of conventional setts. In 2023 the growth room was subdivided to include a slow growth room to aid the long-term maintenance of *in vitro* cultures.

40th Celebration of SASRI quarantine glasshouse

SASRI's director, Dr Shadrack Moephuli, opened the 40th celebration, making note of the key importance of quarantine facilities for food security and preservation. SASRI has always upheld its worldclass quarantine facility to ensure the protection of the South African sugar industry and to enable the safe exchange of sugarcane between breeding facilities all over the world to improve the sugarcane gene pool.

The current Quarantine Pathologist, Aimee Koch, went through a presentation covering a brief history of; (i) the physical glasshouse and the changes/additions that have

been made (Fig 5); (ii) the upgrades to the equipment and (iii) the quarantine staff that have all contributed over the last 40 years (Fig. 6 and 7). Tributes were made to the late Tania van Antwerpen (Quarantine pathologist) and Patrick Majozi (Quarantine assistant) for their significant contributions to Quarantine. Roger Bailey (Plant Pathologist and former Assistant Director), and Solen Subramoney (RSD and Quarantine supervisor), now retired, shared a few standout memories and Dr Sumita Ramgareeb (Breeding and Field Resource Unit Manager) acknowledged the work that was done in the quarantine tissue culture facility on apical meristems for disease elimination. The apical meristem procedure has been implemented as a standard protocol for all imported and exported material in Quarantine, while Pathology, Biotechnology and the NovaCane® facility also use this procedure.

The honour of cutting the quarantine birthday cake, the design of which was based on the all-important disinfecting shoe bath, was given to Roger Bailey, who was instrumental in the design of the glasshouse. All enjoyed a good catch-up over a slice of cake and a cup of tea before heading to the glasshouse to have a look at all the changes which had been mentioned in the presentation. The quarantine glasshouse has been very well maintained, most notably the flooring and walls in all 10 cubicles which have been resurfaced with a special four-layer resin over the last two years. This resin has helped with the strict hygiene requirements. SASRI and SASA were thanked for their continuous support in the maintenance of the glasshouse to ensure all cubicles are working at 100% efficiency and that the highest standards have been maintained for over 40 years. The environment in the glasshouse cubicles is warm and humid, which results in constant maintenance of the equipment and structure. The event was enjoyed by everyone that attended, all of whom had played a role in Quarantine in some way or another, big or small, past or present, over the last 40 years.

BELOW: Figure 7. Viewing of the Quarantine glasshouse

Aimee Koch is Quarantine Pathologist at SASRI

