



Sugarcane Breeding and Varieties in the Sugar Association of Caribbean (SAC) Industries and Prospects for the Future

P. Seshagiri Rao

**West Indies Central Sugar Cane
Breeding Station, *Barbados***

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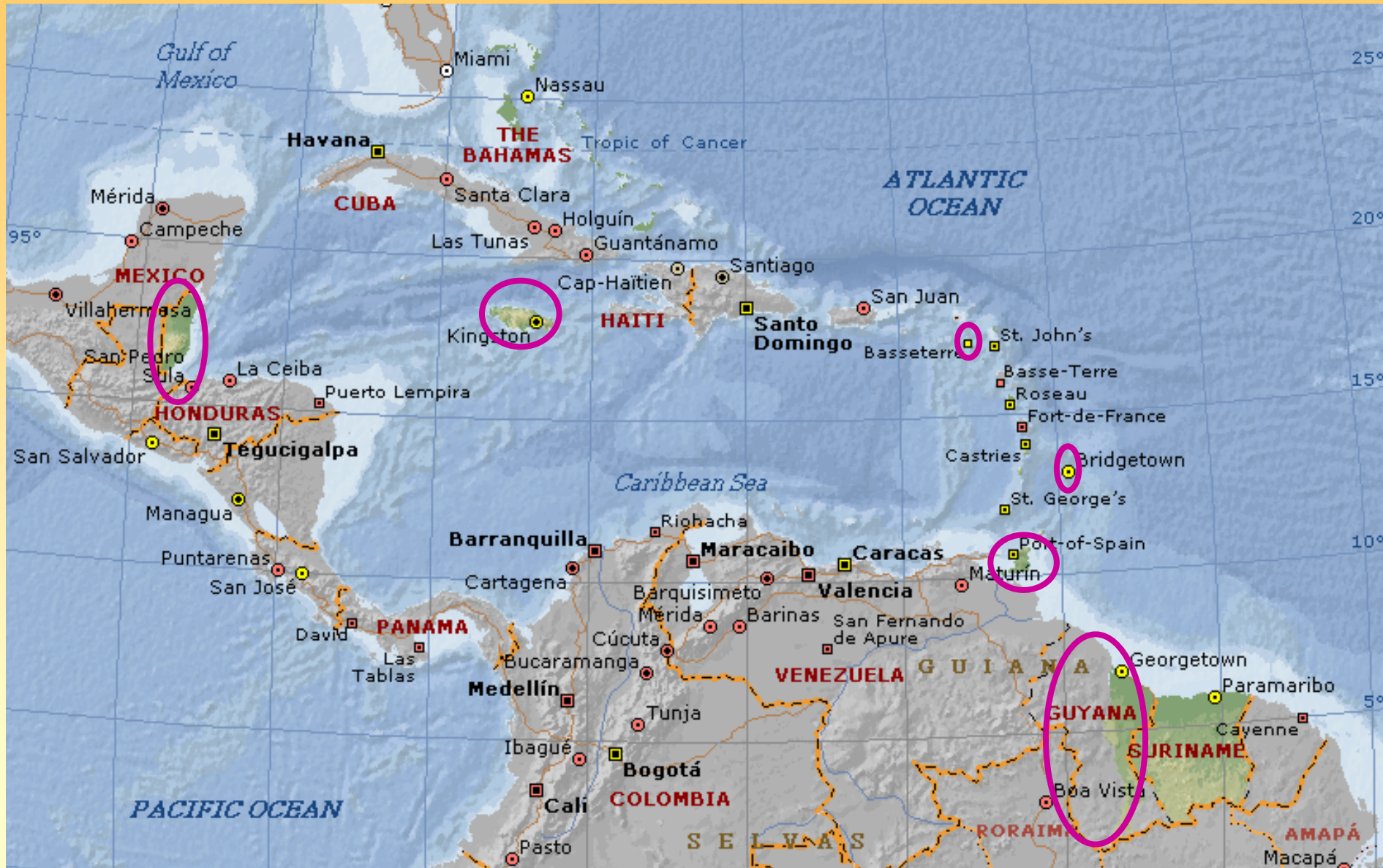
Noble Breeding

- **1888** discovery of sugarcane seedlings in Barbados
- Noble breeding initiated (Barbados and Guyana)
- Early noble varieties
 - BH10(12), Ba11569
 - D75, Diamond 10
- Followed by inter-specific breeding from early 1920s

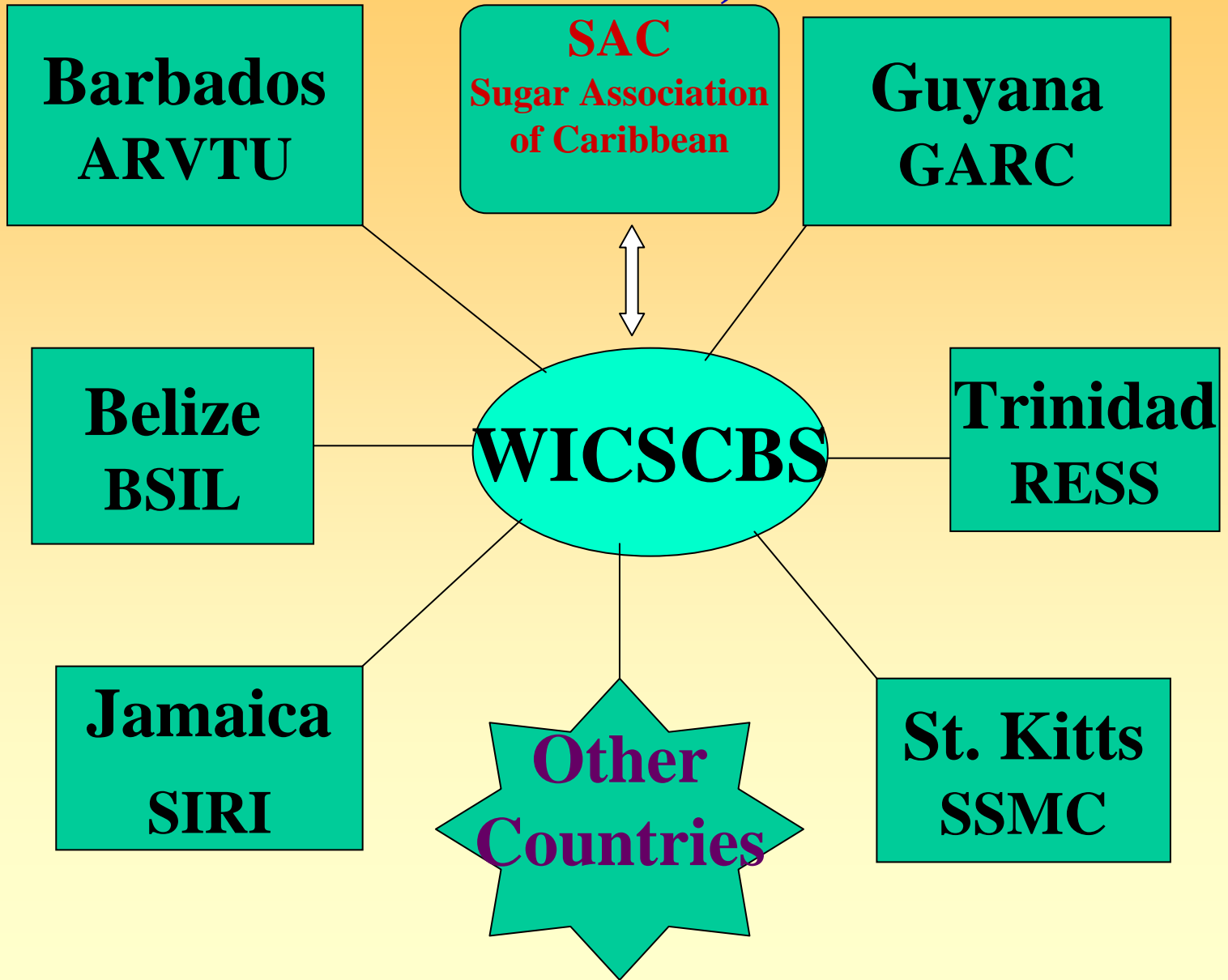
75 years (1932-2007)

Regional Sugarcane Breeding

- **1932** Establishment of regional British West Indies Central Sugar Cane Breeding Station
- **1962** SAC ownership, expansion & continuous support of the West Indies Central Sugar Cane Breeding Station (CBS)
- **Guyana D variety breeding programme**



West Indies Sugarcane Breeding and Evaluation Network, WISBEN



West Indies Sugarcane Breeding and Evaluation Network Countries

- **Guyana, Trinidad, Barbados, St Kitts, Jamaica, Belize**
- **Martinique, Guadeloupe, Dominican Republic**
- **Panama, Nicaragua, Cost Rica**
- **CIRAD: Senegal, Cameroon, Chad, Mali+**
- **Sudan, Uganda**
- **Papua New Guinea**

Cane Breeding Station, Barbados

- **Facilities:**
 - **Office, Labs, 16 Ha land**
- **Staff:**
 - **Director/Senior Plant Breeder**
 - **Pant Breeder**
 - **Geneticist**
 - **Scientific and Technical Assistants (4)**
 - **Support staff**

Sugarcane Breeding

- **Germplasm(3,700): Species, high fibre, high quality and commercial parental varieties**
- **Crossing, fuzz distribution, variety exchange**
- **Genetic base broadening, breeding for high sucrose, fibre and biomass yield**
- **Breeding and selection methods research**
- **Assistance to the SAC variety selection and testing stations, cane breeding workshops**

SAC Variety Selection and Testing Stations

- **Breeding and selection Unit of Guyana Sugar Corporation**
- **Agronomy Research and Variety Testing Unit of Barbados Agricultural Management Co.**
- **Variety Improvement Department of SIRI, SIA, Jamaica**
- **Belize Sugar Industry Limited, Belize**
- **Caroni Research Station, Trinidad**
- **St Kitts Sugar Manufacturing Company**

Breeding Challenges

- Cane yield
- Sucrose content
- Disease resistance
- Ratooning
- Mechanisation
- Adaptation
- Other characteristics

Variety Selection and Testing Stations

- **Decentralised selection of 20 to 60K sdlgs**
- **Fuzz germination, raising seedlings**
- **Early stages (1,2 or 1,2,3) of selection**
- **Advanced yield trials-preliminary & final**
- **Variety propagation, extension**
- **Testing for diseases and pests**
- **Variety distribution & monitoring**

Varieties with Wider Adaptation

BH10(12)- T, B, SK, J,

B34104- G, T, B, SK, J

B37172- T, J

B41211- B, SK

B4362- G, T, J

B 49119- T, B, SK, J

HJ5741- G, T, SK, J, BLZ

B63118- G, T, B, SK

DB7047- G, SK

POJ2878- G, J

B37161- G, T, B, SK, J

B4098- G, B

B41227- G, T, J

B45151- B, SK

B59136- SK, BLZ

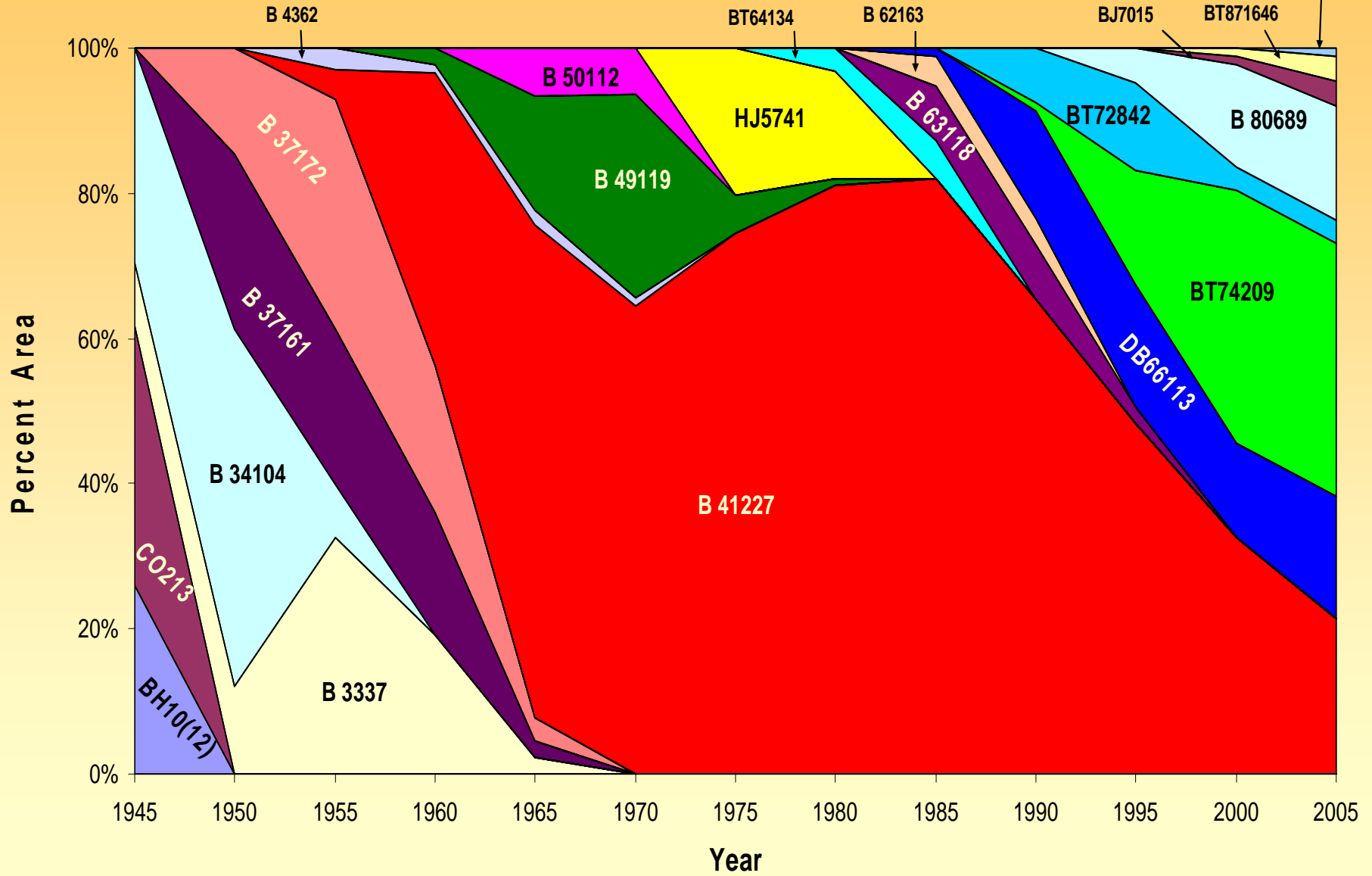
B62163- T, B, SK

B79474- B, BLZ

DB7869- G, T

Percent Area Occupied by Varieties in Trinidad from 1945-2005

DB7869



New Sugar Cane Industries

- Value added products with sugar
- Multi-purpose (MPC) varieties with higher sugar, fibre and biomass yield
- Current MPC varieties are not custom made
- Possible to breed MPC varieties with the available parental germplasm but need time
- Breeders and variety selectors need to know very early what kind of varieties are needed by the emerging sugar cane industries

Reasons for CBS Success

- Long history
- SAC continuous support
- long service of CBS staff
- Large germplasm
- Efficient breeding systems
- Scientific support to the VTSs
- Genetic base broadening and breeding for high sucrose programmes
- Genetic variability to breed varieties for emerging sugar cane industries

Conclusions

- **Regional variety testing stations selected much needed productive varieties**
- **Varietal change in the recent times has been slow in some countries**
- **Support from SAC and regional industries should continue**
- **New industries will demand additional support for variety improvement programmes**

Thank you