

Pakistan Agricultural Research Council
National Sugar and Tropical Horticulture Research Institute
Thatta

Research & Development Activities

By
Dr. Ghulam Muhiyuddin Kaloi
Director



Background (history)

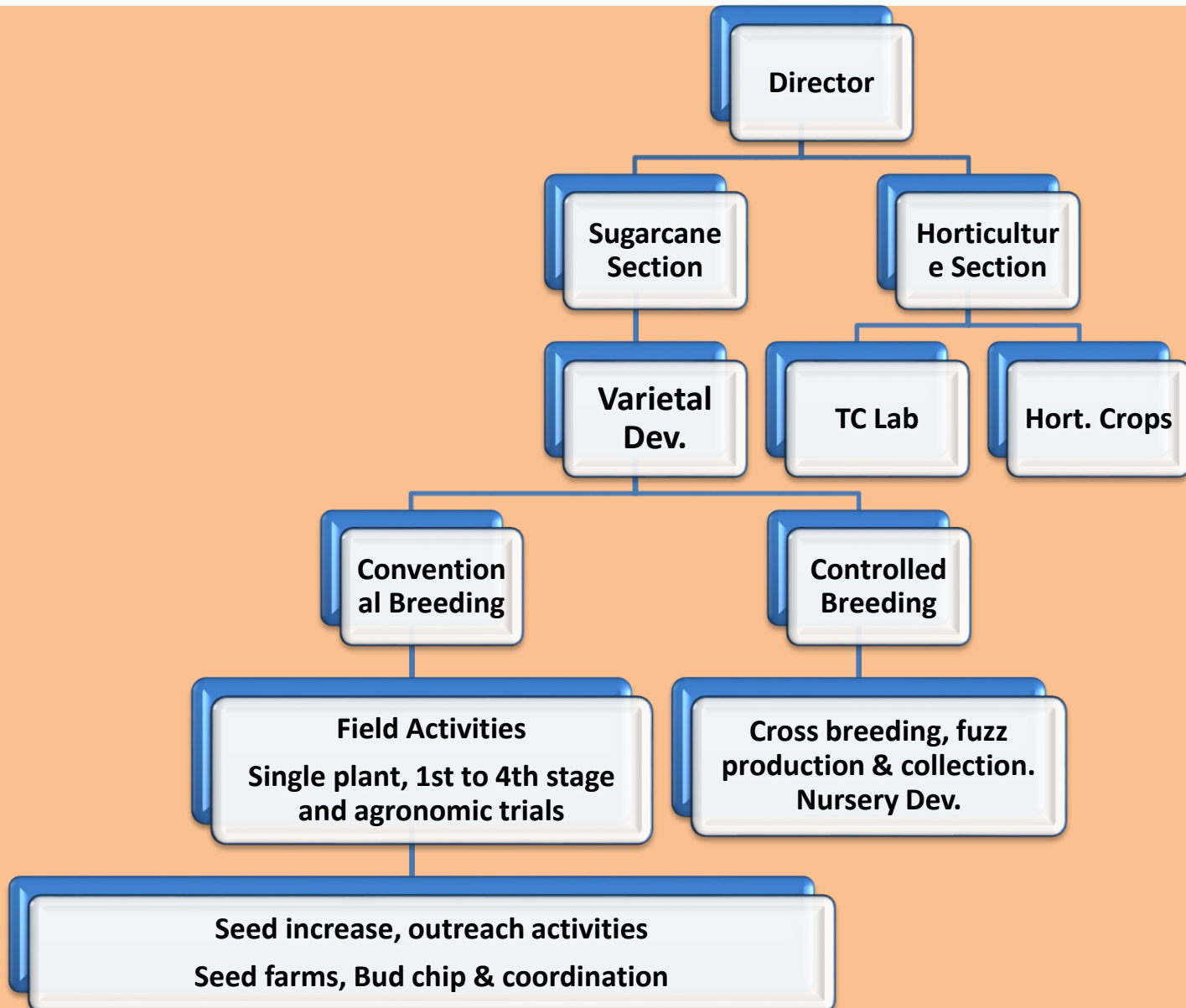
- The institute is working under administrative control of Pakistan Agricultural Research Council (PARC), Islamabad, Ministry of National Food Security and Research, Government of Pakistan
- 1998-2003: PSDP project *“National Sugarcane Research Institute (NSCRI)”* at Thatta.
- 2003-2013: Changed from development to non-development as with same objectives.
- 2013- up to date: the scope of NSCRI was extended by renaming it as *“National Sugar a and Tropical Horticulture Research Institute (NSTHRI)”*.

**Pakistan Agricultural Research Council
National Sugar & Tropical Horticulture Research Institute Thatta**

Mandate

- 1. Sugarcane variety development.**
- 2. Propagation of high yielding and disease free banana varieties through tissue culture.**
- 3. Research on tropical fruit crops.**

Sectional diagram of institute



A photograph of a sorghum field with tall, green, blade-like leaves reaching towards a clear blue sky. The plants are densely packed and appear to be in a mature stage of growth. A white, rounded rectangular box is overlaid in the center of the image, containing the text.

**Progress
2021 - 2022**

Planting of Sugarcane Variety Evaluation Trials 2021-22

1st stage

185

2nd stage

187

3rd stage

14

4th stage

12

Preliminary
varietal yield
trial

6

Advanced
varietal trial

3

Varieties selected for NUVYT 2022-24

Thatta-1970



Av. Yield 1600 Maunds/acre
Av. CCS: 12.0%

Thatta-1822



Av. Yield 1500 Maunds/acre
Av. CCS: 12.0%

Maintenance of sugarcane germplasm

Planting year 2020-21
(Data collected up to December 2021)

Description	Makli farm	Keti Bandar
Total entries	239	59
Booted	49	19
Flowered	44	13
Fuzz collected	1.874 kg	750 g

Collection, drying and storage of fuzz



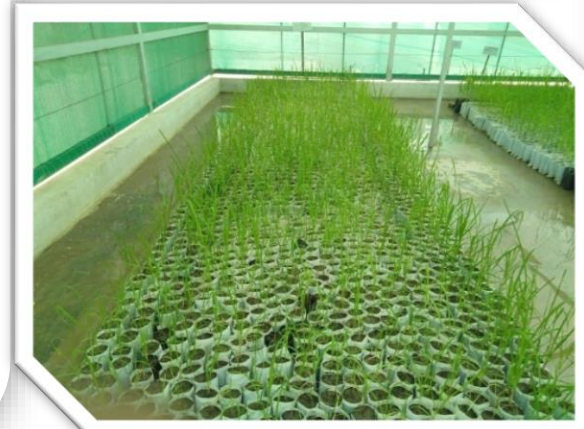
Fuzz collection and seedling development

Particulars	2021-22
Fuzz collected	<u>10.5</u> kg (up to Jan 2022)
Seedlings developed from local fuzz	More than <u>10500</u> seedlings are developed. Fuzz sowing activity is continued on new nursery beds
Total <u>5522</u> g of local sugarcane fuzz have been provided to different Research Institutes of Pakistan.	

Sowing of Fuzz Nursery (old method)



Sowing of Fuzz Nursery (new method)



Hybridization facilities at PARC-NSTHRI Thatta

Overall objective of this project component are to “Strengthen national sugarcane breeding program and viable fuzzi production with desired characteristics”.

The specific objectives are:

- Establish sugarcane cross breeding facility.
- Acquire, multiply and conserve germplasm of elite local and exotic origin.
- Produce viable and quality fuzzi through cross breeding of desired lines.
- Support national sugarcane research institutes through provision of high value locally developed sugarcane fuzzi.

Glasshouse and photoperiod chambers



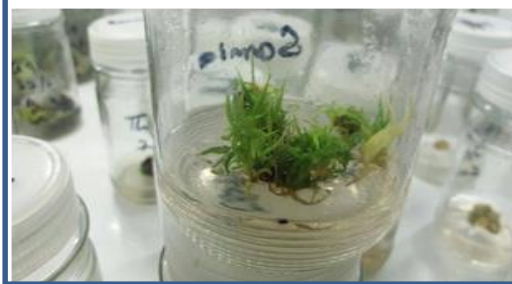
Sugarcane bud chip technology



Sugarcane seedling transplanter introduced by PARC NSTHRI Thatta



Sugarcane and banana tissue culture



Salient achievement

- Developed four high cane and sugar yielding i.e. Thatta-10 (2004), Thatta-326 and Thatta-2109 (2018) and YT-55-Thatta (2020).
- Eighteen potential varieties are under pipe line at final stage.
- Won mega project PSDP-Productivity Enhancement of Sugarcane (PESC).
 - i. Development of hybridization facility
 - ii. Development quality Lab
 - iii. Sugarcane bud chip technology
 - iv. Introduced sugarcane bud chip seedling tansplanter
 - v. Acquiring of germplasm (local and exotic)
- Developed tissue culture protocols for sugarcane seed multiplication. It helped rapid seed multiplication of new varieties.
- Seed developed through tissue culture and bud chip have efficiency to produce healthy canes with more number of tillers/plants.

Future vision

Development of sugarcane varieties:



High yield, high sugar recovery, resistant to disease and pest and salt and drought resistant:

- i. Quality sugarcane fuzzi production through cross breeding of bi-parental sugarcane lines for desirable characteristics.
- ii. Distribution of quality fuzzi within national Institutes.
- iii. Provision pure seed of sugarcane varieties (through tissue culture and bud chip technology).
- iv. Maintenance of plant population and gape filling (bud chip technology)



Thanks