

LOCAL VIABLE FUZZ PRODUCTION IS THE NEED OF TIME

By

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INTRODUCTION

- ‘Fuzz’ is true seed of sugarcane
 - ‘Genetic Variability’ is key to develop new varieties of any crop
 - The SRI's varietal development program is exploiting genetic variability from following sources to serve the purpose
 - ✓ Fuzz (True Seed)
 - ✓ Introduction of Cane Setts
 - Import fuzz from various countries expending large amount of money for the sustainability of varietal developmental process
 - The fuzz is raised, advanced and tested at various selection stages for 10-12 years to release a new commercial variety
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Current Resources of Fuzz

- Fuzz have been brought from USA, Barazil, Australia, Africa, Barbados and Mauritius
 - Fuzz from Srilanka was taken through PARB Project 163 which continued many years
 - From 2018 to date SRDB is providing Fuzz and Introduction of cane sett
 - Exchange of Clones/varieties with USA, France, India, Australia
 - NARC also provided fuzz and clones imported from China
 - SRI has exchanged clones with Phillipine to add new resource in varietal development program
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Conditions for Fuzz Production

■ Day Length

- Day length of 12:30 h is required for specific period of time
- Then decline of specific interval (like @ 1minute/day) continued
- Sugarcane is Short Day Plant

■ Humidity

- Humidity should be >70%

■ Temperature

- Temperature should range from 20-30C°
- Optimum Temperature should be 28C°

❖ These treatments should be started at the age of 6-9 nodes per cane

Photoperiod/ Crossing House Conditions Adopted by SRS, Louisiana

- Sowing of Crop => **October**
- Transplanting Seedlings into Pots (38L) => **January**
- Static Photoperiod (12:30h) => **1st June-10th July**
- Induction Photoperiod(1m/day) => **11th July-Mid Sep.**
- Six Photoperiod Chambers to response various Clones
- Marcotted flowering stalks are taken to **Crossing House** where
 - Relative Humidity 85-98%
 - Temperature 29-35C°

❖ Crossing Season ends during November (Annual Reports Louisiana)

Crossing House



Marcot

Crossing of Male & Female Arrow



Inside View



Crossing Techniques in Different Countries

- ❖ All breeding structures in world utilizing partial controlled conditions
 - ❖ In Australia the flowering clones are clipped from field and placed in crossing solution for hybridization
 - ❖ In Louisiana and Canal Point Marcotting is used to take clones for crossing
 - ❖ More chambers in Photoperiod House formed as clones show different response
 - ❖ SASRI, Africa also using partial controlled conditions
 - ❖ In Srilanka natural conditions exist that favor flowering and crossing
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Canal Points



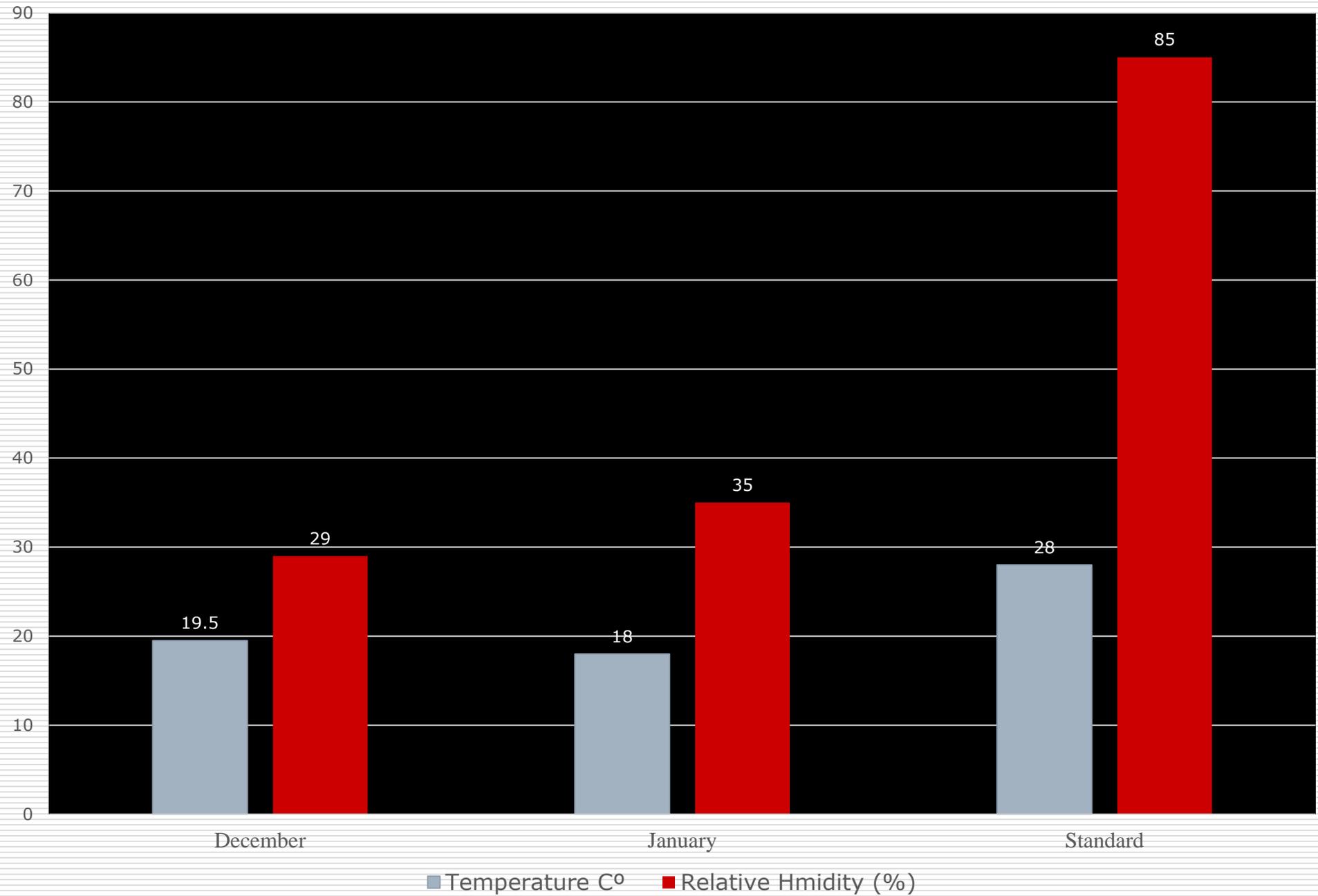
Srilanka



Proposed Station for Flowering & Crossing in Pakistan

- There should be Sugarcane Breeding Institute at National Level
 - NSTHRI, Thatta observes constant pattern of decline daylength
 - Day length is maximum 14:14h at 22 June
 - It becomes 12:30h at 11th September each year
 - The Day length decreases about @1.56-1sec/ day until 22nd December
 - The flowering starts during the month of December
 - Average Relative Humidity is 29 and 35 percent in December and January respectively
 - The temperature ranges 12-27C° during December and 11-25C° January
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Comparison in Conditions at Flowering Season





Proposed Station for Flowering & Crossing in Pakistan

- NISTHRI, Thatta sending fuzz SRI, FSD from many years
 - Many varieties like CPF 246, CPF 251, HSF 240 flowers each year to produce fuzz but the problem is **viability**
 - In 2020 around seven hundred seedlings were produced from the fuzz received from Thatta at SRI, FSD
 - Photoperiod and Crossing House has been developed at Thatta
 - A combined collaborative work is required by all institutes working on varietal development
 - For this purpose plantation of “**Crossing Blocks**” is required by sharing germplasm with NISTHRI, Thatta
 - Common funds also need for successful collaboration
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Photoperiod and Crossing House at Thatta



Output of Local Hybridization Program

- ❑ More adaptability containing more characters
 - ❑ Combination of desired crosses (HSF-240 x SPF-234)
 - ❑ Saving of resources & time
 - ❑ Sorting out outclass families
 - ❑ Better Selection Index
 - ❑ Utility of local germplasm
 - ❑ More chances of international collaboration
 - ❑ Viability and sustainability of Industry
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Sowing of Fuzz



Germinated



Singled out in Earthen Pots



Field Evaluation

Summary CPF 253 Development

Year	Stage
2001-02	Fuzz was imported from Canal Point, Florida, USA, it germinated and seedlings planted into the field
2002-03	Selection, Clone No. S2002-US-133 was assigned and advanced to Nursery-I (Single Line)
2003-04	Selection of N-I, advancement of clone into Nursery-II (Double line)
2004-05	Selection of N-II, advancement of clone into Nursery-III (Replicated Trial)
2005-06	Evaluation at N-III, advancement of clone into Semifinal Trial at Faisalabad and Khanpur
2006-07	Evaluation of clones at Semifinal, advancement of clone into Final at Faisalabad and Khanpur
2007-08	Evaluation at final stage at Faisalabad and Khanpur and checking Ratooning potential of clone
2008-09	Evaluation at final stage at Faisalabad and Khanpur
	From 2009 to 2016 different aspects of agronomic and adaptability were tested
2016-17	1 st Year of National Uniform Varietal Yield Trials (NUVYT), DUS Testing by FSC&RD, Zonal Trials
2017-18	2 nd Year of National Uniform Varietal Yield Trials (NUVYT), DUS Testing by FSC&RD, Zonal Trials
2018-19	Zonal Trials, Spot Examination and Release of Variety with the name of CPF 253 after approval from Punjab Seed Council



THANKS