

Development of New Sugarcane Varieties to Enhance Sugarcane Yield and quality

By

Saifullah Talpur
Director

**NATIONAL SUGAR & TROPICAL
HORTICULTURE RESEARCH INSTITUTE PARC,
MAKLI, THATTA**



Historical perspective of NSTHRI

1. The center was established in 1982 with the name of Southern Zone Agriculture Research Centre (SZARC) Sujawal, Sindh
2. In 1987- The Name SZARC was changed to SZARI.
3. In 1988- Breach in river Indus flooded all the material and infrastructure in Sujawal. In 1989- the Institute (SZARI) was shifted from Sujawal to Thatta.
4. In 1990, research work on sugarcane varietal development was started using local and exotic fuzz (Seed Material)
5. In 1998 – PSDP Project “*National Sugar Crops Research Institute was started and completed in 2003.*
6. In 2003, National Sugar Crops Research Institute was established as Regular Program.
7. In 2013, the scope of the institute was extended by renaming it as National Sugar & Tropical Horticulture Research Institute (NSTHRI)

3

OBJECTIVES

1. To develop and propagate sugar crops with higher yield and sucrose content for different agro-ecological zones with resistance to drought, salinity, water logging and frost etc.
2. To undertake research on tropical horticultural crops and development of optimum packages for their cultivation in coastal area.
3. To undertake research on cereals, oil seed and other crops for their optimum production in coastal areas.
4. To undertake research on water and soil for irrigation and reclamation of soil using modern techniques that best suits sugarcane and tropical horticulture
5. To disseminate the knowledge among the farmers to develop linkages between national and international institutes.

4

RESEARCH UNITS WITHIN

National Sugar and Tropical Horticulture Research Institute, Thatta

SUGAR CROPS

**TROPICAL
HORTICULTURE CROPS**

**CEREALS, OILSEED
& OTHER CROPS**

LAND & WATER RESOURCES

**FARM OPERATIONS
& MANAGEMENT**

**SUGARCANE
RESEARCH FOR
VARIETAL
DEVELOPMENT**

VARIETY DEVELOPMENT PROCEDURE

Year	Selection Stages
Year 1	Sowing of Fuzz / Maintenance of Nursery
	Transplantation in single clone trial
Year 2	First cycle
Year 3	Second cycle
Year 4	Third cycle
Year 5	Fourth cycle
Year 6	Preliminary yield trial
Year 7	Zonal testing / NUVYT
Year 8	Agronomic trials and seed multiplication

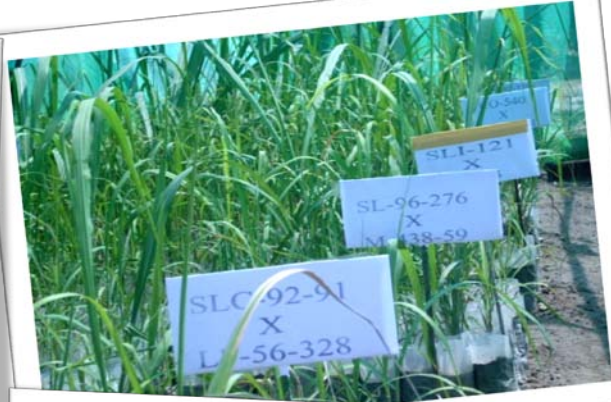
7

Selection Criteria for Sugarcane Variety Development

- **High yield and sucrose content.**
- **Resistance to insect pest and disease.**
- **Resistance to drought, frost and salinity.**
- **Good ratooner.**
- **Erect and self trash.**
- **Non flowering.**
- **No pith.**



SUGARCANE FUZZ COLLECTION & NURSERY DEVELOPMENT



Variety Development Trials (2013-14)

S.No	Activities	Progress Varieties/Genotypes
01	Maintenance of germplasm	About 300/ year
02	Maintenance of Nurseries	5248
03	Single Plant Trial	4935
04	Ist Cycle	798-(3050)
05	2 nd Cycle	331-(1309)
06	3 rd Cycle	22-(64)
07	4 th Cycle	12-(38)
08	Preliminary Yield trial	8-(14)
09	Advanced Variety Trials	3 (3)
10	NUVYT (plant 1st&2nd)	8+8
11	NUVYT (ratoon)	8
12	Chinese (setts)	3 (7)
13	Promising Lines	10

CLONES / GENOTYPES EVALUATED UNDER SUGARCANE VARIETY DEVELOPMENT TRIALS

Year Evaluation	Single plants	1 st Cycle	2 nd Cycle	3 rd Cycle	4 th Cycle	Preliminary yield trial	Advanced varietal yield trial
2005-06	1190	70	87	46	22	16	9
2006-07	376	176	38	25	11	9	8
2007-08	376	449	70	28	10	7	9
2008-09	695	302	277	20	10	6	7
2009-10	4000	469	84	59	8	6	6
2010-11	2500	560	314	72	29	8	4
2011-12	2486	1013	92	50	7	8	8
2012-13	3050	1309	64	38	14	3	3
2013-14	4935..	798	331	22	12	8	3

Performance of Sugarcane Genotypes in 4th Cycle 2012-13

S.No.	Genotypes	Cane thickness (mm)	Cane height (cm)	Internodes/Plant	Millable canes 000ha ⁻¹	Cane Yield (t ha ⁻¹)	CCS%
1.	Th-1201	26.67	267.4	19.5	90.00	108.0	12.35
2.	Th-1205	25.85	257.2	15.6	80.00	120.00	12.87
3.	Th-1206	22.35	247.8	22.0	75.00	60.00	12.12
4.	Th-1208	25.58	258.2	19.0	100.00	106.00	11.98
5.	Th-1210	25.56	247.6	22.3	125.00	120.00	8.87
6.	Th-1211	25.36	256.3	21.6	140.00	140.00	12.26
7.	Th-1215	24.24	226.6	22.4	105.00	88.00	12.38
8.	Th-1223	21.57	229.0	26.3	100.00	63.00	8.71
9.	Th-1229	23.41	250.4	17.3	125.00	90.00	10.20
10.	Th-1234	21.72	226.6	18.6	140.00	75.00	9.51
11.	Th-1237	22.18	242.2	24.3	140.00	84.00	11.79
12.	Th-1238	25.78	257.7	18.3	175.00	154.00	12.05
13.	Th-1245	22.62	239.6	18.0	125.00	122.00	12.72
14.	Th-1250	22.96	197.8	19.0	100.00	75.00	9.99
15.	Th-10 (check)	25.76	208.6	21.0	110.00	80.00	10.65

Quality Performance of Sugarcane Genotypes in 4th Cycle 2012-13

Genotypes	Fiber%	Brix%	Pol%	Purity%	CCS%
Th-1201	12.40	21.0	17.35	82.61	12.35
Th-1205	12.34	20.8	17.66	84.90	12.87
Th-1206	12.66	19.0	16.42	86.42	12.12
Th-1208	12.71	19.2	16.38	85.31	11.98
Th-1210	12.83	19.0	13.76	72.42	8.87
Th-1211	12.29	20.0	16.89	84.45	12.26
Th-1215	12.35	20.0	16.98	84.90	12.38
Th-1223	12.57	20.0	13.97	69.85	8.71
Th-1229	12.69	17.5	14.19	81.08	10.20
Th-1234	12.55	19.8	14.56	73.53	9.51
Th-1237	12.57	19.2	16.23	84.53	11.79
Th-1238	12.38	21.8	17.32	79.44	12.05
Th-1245	12.41	20.2	17.32	85.74	12.72
Th-1250	12.81	16.0	13.66	85.37	9.99
Th-10 (check)	12.44	20.0	15.56	77.80	10.65

Performance of Sugarcane genotypes in Preliminary Yield Trial 2012-13

Genotypes	Cane thickness (mm)	Cane height (cm)	Internodes Plant ⁻¹	Millable canes 000 ha ⁻¹	Cane Yield (t ha ⁻¹)
Th-1101	24.91	221.00	19.15	106.65	67.54
Th-1102	24.02	245.33	18.73	101.65	76.58
Th-1170	22.25	285.33	25.20	160.00	115.73
Thatta-10	26.33	215.33	21.89	126.65	98.36

Genotypes	Fiber%	Brix%	Pol%	Purity%	CCS%
Th-1101	12.31	19.4	15.90	81.95	11.31
Th-1102	12.43	19.8	16.83	85.00	12.28
Th-1170	12.50	20.2	17.29	85.59	12.68
Thatta-10	12.30	21.0	17.81	84.80	12.98

Promising Varieties registered at FSCRD and are under the process of approval for commercial cultivation in Sindh

S. No.	Variety Name	AV. Cane Yield (Mounds/acre)	Av. Sugar Recovery%
1.	Thatta -300	1600	12.0
2.	HoTh-127	1300	13.5
3.	HoTh-2109	1250	13.5
4.	HoTh-311	1600	12.5
5.	HoTh-318	1300	12.5
6.	HoTh-326	1500	12.5
7.	<u>HoTh-409</u>	1600	12.0
8.	<u>Th-910</u>	1145	13.9

VARIETY SUBMITTED TO PROVINCIAL SEED COUNCIL FOR APPROVAL

Variety	Status	Av. Cane Yield (Mounds/acre)	Sugar Recovery%
Thatta-300	Under Approval Process at Sindh Provincial Seed Council	1600	12.0



17

Candidate Sugarcane Varieties



18



SOWING DATE: November 17, 2013





HoTh-300
YIELD - 1600 *monds/acre*
SUGAR RECOVERY 12.0%



HoTh-2109
YIELD - 1250 *monds/acre*
SUGAR RECOVERY 13.5%



HoTh-311
YIELD - 1600 *monds/acre*
SUGAR RECOVERY 12.5%



HoTh-318
IELD - 1300 *monds/acre*
GAR RECOVERY 12.5%



HoTh-326
YIELD - 1500 *monds/acre*
SUGAR RECOVERY 12.5%





PERFORMANCE OF CHINESE SUGARCANE VARIETIES (2012-13)

S.No.	Variety Name	AV. Cane Yield (Mounds/acre)	Av. CCS %
1.	YT-53	1400	12.00
2.	YT-55	1300	13.00*
3.	Thatta 10 (as check variety)	1500	12.50
<i>*YT- 55 have shown significant CCS %</i>			

Brief Status: 07 Chinese sugarcane varieties viz. RoC -01, RoC-16, RoC-20, RoC-22 YT-53, YT-55 and YT-236 were evaluated. Out of these only 02 varieties viz. YT-53 and YT-55 were selected on account of their better performance. These are under further testing process at NUVYT and Zonal Testing Trials .

32

Performance of Chinese Sugarcane & Promising Sugarcane Varieties at NSTHRI, Farm 2012-13

Variety	Cane thickness (mm)	Plant Height (cm)	Number of internodes plant ⁻¹	Millable canes 000ha ⁻¹	Cane Yield (t ha ⁻¹)
RoC-01	24.45	189.99	19.55	90.00	76.65
RoC-16	23.03	178.83	20.55	78.30	61.65
RoC-20	22.92	178.22	21.33	73.30	60.00
RoC-22	23.93	188.22	20.99	80.00	65.00
YT-53	27.98	221.66	25.11	131.65	121.66
YT-55	27.21	227.70	25.66	146.65	126.66
YT-236	24.99	191.66	23.55	103.30	90.00
Thatta-10	26.12	206.10	22.10	106.65	96.65

Performance of Chinese Sugarcane & Promising Sugarcane Varieties at NSTHRI, Farm 2012-13

Variety	Fiber%	Brix%	Pol%	Purity%	CCS%
RoC-01	12.51	18.5	14.18	76.64	10.19
RoC-16	12.43	18.7	14.22	76.04	10.16
RoC-20	12.55	18.7	14.31	76.52	10.27
RoC-22	12.31	18.9	14.80	78.30	10.80
YT-53	12.18	20.0	17.22	86.10	13.37
YT-55	12.27	20.4	17.19	84.26	13.18
YT-236	12.37	19.2	15.27	79.53	11.27
Thatta-10	12.29	20.0	16.83	84.15	12.20

CHINESE SUGARCANE VARIETIES





TISSUE CULTURE ACTIVITIES AT NSTHRI THATTA

Multiplication of sugarcane seed through tissue culture:

- At current stage thousands of plants of Thatta-300, YT-53 and YT-55 are at different stages of multiplication process.
- An evaluation and field-survival trial of sugarcane tissue-cultured plants of Thatta-300 variety was conducted under field conditions.
- Field Performance of Tissue-cultured plants showed better growth and also produced Average **13** tillers under field conditions.



TISSUE CULTURE ACTIVITIES AT NSTHRI THATTA

Multiplication of sugarcane seed through tissue culture:

- At current stage thousands of plants of Thatta-300, YT-53 and YT-55 are at different stages of multiplication process.
- An evaluation and field-survival trial of sugarcane tissue-cultured plants of Thatta-300 variety was conducted under field conditions.
- Field Performance of Tissue-cultured plants showed better growth and also produced Average **13** tillers under field conditions.





INTRODUCTION OF PLASTIC / POLYTHENE MULCHING TECHNOLOGY IN SUGARCANE CROP



42

PLASTIC / POLYTHENE SHEET MULCHING TECHNOLOGY

- The plastic film was imported from China under Pak-China Agriculture Cooperation Project.
- Research trials on plastic film mulching were conducted at different farmer's fields in Sindh.
- The application of plastic film increase soil temperature by 4 °C and increase humidity by 5-10% which help in germination.
- In lower Sindh after harvesting of paddy crop, sugarcane is often planted late during November and onward, then this technology is quite better to improve the sugarcane germination. (increases 8-10 %)
- Experiment: Sugarcane Variety Triton: Site: Makli Agriculture Farm

Treatments	Plant height (cm)	Cane girth (mm)	Millable cane/ha	Cane Yield (t/ha)
Chinese plastic Film	230.53	27.66	138,300	126.66
Local plastic Film	228.76	27.34	130,000	121.66
Control	229.86	26.89	113,300	113.30

43

ZONAL EVALUATION AND SEED MULTIPLICATION OF NEW VARIETIES

Sr. No	Location	Grower's name	Number of varieties tested					
			2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
1.	Badin	Raja M. Aslam	8	9	9	9	9	-
2.	Badin	Hasnain Mirza	-	-	-	9	9	-
3	Morjhar, Badin	-do-	-	6	6	6	6	-
4	Shaikh Bhirkio, Hyderabad	Bashir Ahmed Bhurgri	11	9	12	12	9	-
5	Shah Bandar, Thatta	Rana M. Azhar	8	13	13	9	9	-
6	Jhirk Site, Thatta	Qadir Bux Jamali	4	6	6	9	11	12
7	Jhirk Site, Thatta	Sarfaraz Nizamani	-	-	6	6	8	-
8	Jhirk Site, Thatta	Agha Hamayon	-	-	-	-	-	11
9	Bano road, Sijawal	Dr. Haji Khan Keerio	-	-	--	-	-	4
10	Matitari	Ferozuddin Shah	6	8	8	12	12	-
11	Sanghar	M. Hassan Keerio	7	7	7	9	9	-
12	Sinjhor, Sanghar	Shafiq Ahmed	-	-	-	-	-	2
13	Khipro, Sanghar	M. Hashim Rajar	-	-	-	3	5	-
14	Tando Allahyar	Anwar Ali Bachani	6	6	6	9	9	-
15	Tando Allahyar	Hassan Bux Dars	-	-	-	-	-	8
16	Naushero Feroze	Abdul Haque Bhurt	7	7	7	7	7	-
17	Shaheed Banazirabad	Pir Bux	-	14	14	9	9	-
18	Mirpur Khas	Ch. M. Akram	-	-	-	2	2	-

Seed Multiplication of the NSTHRI, PARC Developed and Chinese Sugarcane Varieties, 2012-13

District	Names of Progressive Growers & Sugar Mill Farms and Locations	Seed Multiplication of Sugarcane Candidate Varieties	
		NSTHRI developed varieties:	Chinese varieties
District Sanghar			
1.	Shafique Ahmed, Sinjjhor		YT-53 and YT-55
District Tando Allahyar			
1.	Dars Agriculture Farm,	Thatta-10, HoTh-409, HoTh-2019, HoTh-318, HoTh-300 and HoTh-326	YT-53 and YT-55
District Shaeed Benazirabad			
1.	Pir Bux Hot		YT-55
District Thatta			
1.	Agha Hamayoon, Jhirksite		Roc-1, YT-53, YT-55 and YT-236
2.	Qadir Bux Jamali, Jhirksite		YT -53, YT -55 and YT -236
3.	Ghulam Qadir Palejo, Agriculture Farm Makli	HoTh-300, Th-910, HoTh-326, HoTh-409, HoTh-318 and HoTh-2109	YT-53 and YT-55
4.	Haji Khan Keerio, Shah Murad Sugar Mills		YT-53, YT-55 and YT-236

Seed Multiplication of the NSTHRI, PARC developed and Chinese Sugarcane Varieties, 2013-14

Khan			
1.	Abdul Majeed Nizamani, Chairman Sindh Abadgar Board	HoTh-300, HoTh-2019, HoTh-326 ,HoTh-409	YT-53 and YT-55
2.	Faran Sugar Mills Farm	Hoth-2109 and Th-910	YT-53 and YT-55
1.	Arif Jamil Agriculture Farm, Tando Adam ,	HoTh-300, HoTh-127, HoTh-2019, HoTh-326 ,HoTh-409	YT-53 and YT-55
1.	New Tando Allahyar Sugar Mills, Sanjar Chang	HoTh-300, HoTh-127, HoTh-326 , HoTh-2109 and HoTh-409	YT-53 and YT-55
2.	Niaz Muhammad Nizamani Tando Soomro	HoTh-127, HoTh-2019, HoTh- 326 ,HoTh-409 and HoTh-300	YT-53 and YT-55
1.	Pir Izat Hussain Shah Jilani Mirpurkhas	HoTh-300,HoTh-326, HoTh-318,HoTh-2109 and,HoTh-409	YT-53 and YT-55
1.	Ghulam Qadir Palejo, Agriculture Farm, Makli	HoTh-300,Th-910, HoTh-326, HoTh-409, HoTh-318 and HoTh-2109	YT-53 and YT-55
2	Dr. Qadir Bakhsh Mangsi Agriculture Farm, Thatta	HoTh-300,Th-910, HoTh-326, HoTh-409, HoTh-318 and HoTh-2109	YT-53 and YT-55
3.	Rasool Bux Jakhro	Hoth-2109 and Th-910	YT-53 and Y ^{AG} T-55

National Sugar and Tropical Horticulture Research Institute (NSTHRI), Thatta

ACHIEVEMENTS

- **Developed more than 35 sugarcane lines.**
- **Thatta-10 is cultivated on more than 20,000 acres at farmers field in Thatta, Mirpur Khas, Tando Muhammad Khan and Sanghar districts of Sindh.**
- **Thatta-300, a new variety, approved by Technical Sub-Committee is under approval process at Sindh Provincial Seed Council.**
- **More potential varieties of sugarcane (10) are in pipeline for commercialization.**
- **Chinese sugarcane varieties (7) are under evaluation and potential varieties (2) were selected for seed multiplication at farmers field.**
- **Seed multiplication of Banana exotic and local varieties is ongoing.**
- **Seed multiplication of Thatta-300 sugarcane variety through tissue culture is underway.**

Comparison of Thatta-10 and Thatta-300 sugarcane varieties

Thatta-10

- Developed from local fuzzi (L-113).
- Early mature.
- Maturity in 365 days in Autumn crop.
- Maturity in 300 days in Spring crop
- Slow growth habit at initial and fast at latter growth stages.
- Moderate tillering ability.
- Moderately self trashed.
- Medium thicker cane stalks.
- Yield potential 1800-2000 Mnds/acre.
- Average yield 1500 Mnds/acre (Autumn crop), 1100 Mnds/acre (Spring crop).
- Sugar recovery 12.50%
- No lodging.
- Resistant to top and root borer, moderately susceptible to stem borer.
- Moderately resistant to smut and resistant to rust diseases.
- Susceptible to red rot.

Thatta-300

- Developed through exotic fuzzi (true seed)
- Mid mature.
- Maturity in 425 days in Autumn crop.
- Maturity in 360 days in Spring crop
- Fast growth habit in all growth stages.
- Profuse tillering ability.
- Self trashed.
- Thicker cane stalks.
- Yield potential 2000-2200 Mnds/acre.
- Average yield 1800 Mnds/acre (Autumn crop), 1400 Mnds/acre (Spring crop).
- Sugar recovery 12%
- Medium lodged with spiral growth habit.
- Resistant to root, stem and top borers .
- Resistant to smut, rust and red rot diseases.

Variety for Approval

Variety	Status	Av. Cane Yield (Mnds/acre)	Sugar Recovery%
Thatta-326	Proposal to be submitted after DUS data	1500	12.5



Comparison of Thatta-10 and Thatta-326 sugarcane varieties

Thatta-10

- Developed from local fuzzi (L-113).
- Early mature.
- Maturity in 365 days in Autumn crop.
- Maturity in 300 days in Spring crop
- Slow growth habit at initial and fast at latter growth stages.
- Moderate tillering ability.
- Moderately self trashed.
- Medium thicker cane stalks.
- Yield potential 1800-2000 Mnds/acre.
- Average yield 1500 Mnds/acre (Autumn crop), 1100 Mnds/acre (Spring crop).
- Sugar recovery 12.50%
- No lodging.
- Resistant to top and root borer, moderately susceptible to stem borer.
- Moderately resistant to smut and resistant to rust diseases.
- Susceptible to red rot.

Thatta-326

- Developed through exotic fuzzi (true seed)
- Early mature.
- Maturity in 365 days in Autumn crop.
- Maturity in 300 days in Spring crop
- Medium fast growth habit at initial and fast in later growth stages.
- Profuse tillering ability.
- Semi Self trashed.
- Medium thicker cane stalks.
- Yield potential 1800-2000 Mnds/acre.
- Average yield 1500 Mnds/acre (Autumn crop), 1200 Mnds/acre (Spring crop).
- Sugar recovery 12.5%
- Semi spreading with spiral growth habit.
- Resistant to root, stem and top borers .
- Highly resistant to smut and resistant to rust diseases.
- Moderately Resistant to red rot.

Variety for Approval

Variety	Status	Av. Cane Yield (Mnds/acre)	Sugar Recovery%
Thatta-2109	Proposal to be submitted after DUS data	1250	13.5



Comparison of Thatta-10 and Thatta-2109 sugarcane varieties

Thatta-10

- Developed from local fuzzi (L-113).
- Early mature.
- Maturity in 365 days in Autumn crop.
- Maturity in 300 days in Spring crop
- Slow growth habit at initial and fast at latter stages.
- Moderate tillering ability.
- Moderately self trashed.
- Medium thicker cane stalks.
- Yield potential 1800-2000 Mnds/acre.
- Average yield 1500 Mnds/acre (Autumn crop), 1100 Mnds/acre (Spring crop).
- Sugar recovery 12.50%
- No lodging.
- Resistant to top and root borer, moderately susceptible to stem borer.
- Moderately resistant to smut and resistant to rust diseases.
- Susceptible to red rot.

Thatta-2109

- Developed through exotic fuzzi (true seed)
- Early mature.
- Maturity in 365 days in Autumn crop.
- Maturity in 300 days in Spring crop
- Fast growth habit in all growth stages.
- Moderate tillering ability.
- Semi Self trashed.
- Thicker cane stalks.
- Yield potential 1700-1900 Mnds/acre.
- Average yield 1250 Mnds/acre (Autumn crop), 1100 Mnds/acre (Spring crop).
- Sugar recovery 13.5%
- No lodging.
- Resistant to root, stem and top borers .
- Resistant to smut ,rust diseases and red rot diseases.

Variety for Approval

Variety	Status	Av. Cane Yield (Mnds/acre)	Sugar Recovery%
Thatta-409	Proposal to be submitted after DUS data	1600	12.0



Comparison of Thatta-10 and Thatta-409 sugarcane varieties

Thatta-10

- Developed from local fuzzi (L-113).
- Early mature.
- Maturity in 365 days in Autumn crop.
- Maturity in 300 days in Spring crop
- Slow growth habit at initial and fast at latter stages.
- Moderate tillering ability.
- Moderately self trashed.
- Medium thicker cane stalks.
- Yield potential 1800-2000 Mnds/acre.
- Average yield 1500 Mnds/acre (Autumn crop), 1100 Mnds/acre (Spring crop).
- Sugar recovery 12.50%
- No lodging.
- Resistant to top and root borer, moderately susceptible to stem borer.
- Moderately resistant to smut and resistant to rust diseases.
- Susceptible to red rot.

Thatta-409

- Developed through exotic fuzzi (true seed)
- Mid mature.
- Maturity in 425 days in Autumn crop.
- Maturity in 360 days in Spring crop
- Fast growth habit in all growth stages.
- Moderate tillering ability.
- Self trashed.
- Thicker cane stalks.
- Yield potential 2000-2200 Mnds/acre.
- Average yield 1600 Mnds/acre (Autumn crop), 1300 Mnds/acre (Spring crop).
- Sugar recovery 12.0%
- No lodging.
- Resistant to root, stem and top borers .
- Resistant to smut, rust and red rot diseases.

Comparison of Thatta-10 and Thatta-127 sugarcane varieties

Thatta-10

- Developed from local fuzzi (L-113).
- Early mature.
- Maturity in 365 days in Autumn crop.
- Maturity in 300 days in Spring crop
- Slow growth habit at initial and fast at latter stages.
- Moderate tillering ability.
- Moderately self trashed.
- Medium thicker cane stalks.
- Yield potential 1800-2000 Mnds/acre.
- Average yield 1500 Mnds/acre (Autumn crop), 1100 Mnds/acre (Spring crop).
- Sugar recovery 12.50%
- No lodging.
- Resistant to top and root borer, moderately susceptible to stem borer.
- Moderately resistant to smut and resistant to rust diseases.
- Susceptible to red rot.

Thatta-127

- Developed through exotic fuzzi (true seed)
- Early mature.
- Maturity in 365 days in Autumn crop.
- Maturity in 300 days in Spring crop
- Medium growth habit in all growth stages.
- Moderate tillering ability.
- Self trashed.
- Thicker cane stalks.
- Yield potential 1500-1800 Mnds/acre.
- Average yield 1300 Mnds/acre (Autumn crop), 1000 Mnds/acre (Spring crop).
- Sugar recovery 13.5%
- No lodging.
- Resistant to root, stem and top borers .
- Resistant to smut and rust diseases.
- Moderately resistant to red rot diseases.

VARIETY DEVELOPMENT PROCEDURE

Year	Selection Stages
Year 1	Sowing of Fuzz / Maintenance of Nursery
	Transplantation in single clone trial
Year 2	First cycle
Year 3	Second cycle
Year 4	Third cycle
Year 5	Fourth cycle
Year 6	Preliminary yield trial
Year 7	Zonal testing / NUVYT
Year 8	Agronomic trials and seed multiplication



56

SUGARCANE VARIETAL DEVELOPMENT AND SEED MULTIPLICATION TRIALS

S.NO	BLOCK	AREA	RESEARCH MATERIAL
1.	B-1		SUGARCANE SEED MULTIPLICATION
2.	B-2	1.5	-DO-
3.	B-3	ACRE	1 ST CYCLE
4.	B-4		-DO-
5.	B-5		NUVYT
6.	C-1		NUVYT, ADVANCE VARIETAL TRIAL & 3 RD CYCLE
7.	C-2	1.5	PRELIMINARY YIELD TRIAL & 4 TH CYCLE
8.	C-3	ACRE	2 ND CYCLE
9.	C-4		GERMPLASM

BLOCK B C



CHINESE SUGARCANE VARIETIES



Performance of Sugarcane Genotypes in Advanced varietal Trial 2012-13

Genotypes	Cane thickness (mm)	Cane height (cm)	Number of internodes Plant ⁻¹	Millable canes 000 ha ⁻¹	Cane Yield (t ha ⁻¹)
Th-1008	24.86	175.66	17.66	90.00	78.33
Th-1009	25.07	170.33	18.33	80.00	70.00
Th-1013	23.46	200.66	16.33	86.65	71.65
Th-1031	24.50	198.66	22.33	83.30	73.30
Thatta-10	26.74	211.33	22.66	103.33	91.65

	Fiber%	Brix%	Pol%	Purity%	CCS%
Th-1008	12.51	18.6	14.64	78.70	10.11
Th-1009	12.34	19.0	15.78	83.05	11.33
Th-1013	12.56	18.4	14.36	78.04	9.84
Th-1031	12.23	19.2	16.00	83.33	11.52
Thatta-10	12.37	19.6	16.25	82.90	11.66