


8. Technology developed

8.1 Sugarcane breeding


8.1.1 Sugarcane early maturing clone was identified for release in Peninsular Zone of the country. (Ref.F.No.31-5/12-PCS of Dr. O. K. Sinha, PC, Sugarcane).

CoN 05071 (Gujarat Sugarcane – 5) (2012)


Particulars	Characteristics	
Parents	CoJn 86310 x Co 86249	
Cane Yield (t/ha)	142.78	
Sugar yield (t/ha)	18.86	
Sucrose % Juice	18.67	
Disease reaction	Red rot : MR Wilt : MR Smut : R	

8.1.2 Sugarcane Variety Released for general cultivation for Farmers' of Gujarat (Released through State Seed Sub Committee)


1) CoN 03131 (Gujarat Sugarcane – 4) (2005)

	Particulars	Characteristics
	Parents	Bo 108 x CoS 510
	Cane Yield (t/ha)	145.74
	Sugar yield (t/ha)	18.98
	Sucrose % Juice	18.55
	Disease reaction	Red rot : MR Wilt : MR


2) CoN 05071 (Gujarat Sugarcane – 5) (2007)

Particulars	Characteristics	
Parents	CoJn 86310 x Co 86249	
Cane Yield (t/ha)	142.78	
Sugar yield (t/ha)	18.86	
Sucrose % Juice	18.67	
Disease reaction	Red rot : MR Wilt : MR Smut : R	


3) CoN 05072 (Gujarat Sugarcane – 6) (2007)

	Particulars	Characteristics
	Parents	Co 8213 X BO 91
	Cane Yield (t/ha)	134.89
	Sugar yield (t/ha)	16.88
	Sucrose % Juice	17.68
	Disease reaction	Red rot : R Wilt : R Smut : R


4) CoN 04131 (Gujarat Navsari Sugarcane – 7) (2011)

Particulars	Characteristics	
Parents	Co 95021 X Co 8347	
Cane Yield (t/ha)	134.74	
Sugar yield (t/ha)	17.06	
Sucrose % Juice	18.13	
Disease reaction	Red rot : MR Wilt : MR Smut : R	


5) CoN 07072 (Gujarat Navsari Sugarcane – 8) (2013)

	Particulars	Characteristics
	Parents	CoS 8436 x Co 86002
	Cane Yield (t/ha)	136.06
	Sugar yield (t/ha)	17.89
	Sucrose % Juice	18.50
	Disease reaction	Red rot : MR Wilt : MR Smut : R


6) CoN 09072 (Gujarat Navsari Sugarcane – 9) (2015)

Particulars	Characteristics	
Parents	Co 0217 G.C.	
Cane Yield (t/ha)	129.05	
Sugar yield (t/ha)	16.15	
Sucrose % Juice	18.00	
Disease reaction	Red rot : MR Wilt : MR Smut : R	


7) CoN 13073 (Gujarat Navsari Sugarcane – 10) (2017)

	Particulars	Characteristics
	Parents	CoN 91132 x CoC 671
	Cane Yield (t/ha)	138.85
	Sugar yield (t/ha)	18.03
	Sucrose % Juice	18.53
	Disease reaction	Red rot : MR Wilt : MR Smut : R

8) CoN 13072 (Gujarat Navsari Sugarcane – 11) (2018) (Navya)

Particulars	Characteristics	
Parents	Co 86032 G.C.	
Cane Yield (t/ha)	132.53	
Sugar yield (t/ha)	17.86	
Sucrose % Juice	19.11	
Disease reaction	Red rot : MR Wilt : MR Smut : R	

9) CoN 15072 (Gujarat Navsari Sugarcane – 12) (2021) (Divyashi)

	Particulars	Characteristics
	Parents	CoM 0265 X CoN 85134
	Cane Yield (t/ha)	129.34
	Sugar yield (t/ha)	16.38
	Sucrose % Juice	17.27
	Disease reaction	Red rot : MR Wilt : MR Smut : R

8.1.4 Clones of the Centre included in National hybridization Garden, SBI Coimbatore

CoN 91132	CoN 85134	CoN 95132	CoN 07072	CoN 09072
CoN 03131	CoN 03132	CoN 05071	CoN 13073	CoN 10071
CoN 05072	CoN 98133	CoN 97132	CoN 13072	

8.1.5 Centre contributed 31 sugarcane clones for zonal testing in AICRP (S) from 2009-10 to 2020-21

Year Variety	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Early	CoN 10071	CoN 11071	CoN 12071	CoN 13071	CoN 14071	CoN 15071	CoN 16071	CoN 17071	CoN 18071	CoN 19071	CoN 20071	CoN 21071
	CoN 10072	CoN 11072	CoN 12072	CoN 13072	CoN 14072	CoN 15072	-	CoN 17072	-	-	-	-
Mid late	CoN 10073	CoN 11073	CoN 12073	CoN 13073	CoN 14073	-	-	-	CoN 18072	-	CoN 20072	CoN 21072
	--	CoN 11074	CoN 12074	CoN 13074	CoN 14074	-	-	-		-	-	-

8.1.6 Breeder Seed distributed for further multiplication

Year	Sugarcane Seed	Sugarcane Tissue Culture Plantlets	Sugarcane Single Eye Bud Plantlets
2015-2016	196.331	1,24,580	48,660
2016-2017	241.235	1,42,984	35,360
2017-2018	159.963	26,000	69,786
2018-2019	249.480	8,714	74,842
2019-2020	159.284	555	2,18,529
2020-2021	174.312	5,015	61,355
2021-2022	177.127	1,105	1,24,514

9. Production and Protection technology developed (2015 to 2022)

8.1 Agronomy

Three sugarcane production technologies were developed and recommended to farmers of South Gujarat heavy rainfall zone AES-III.

Recommendation for farmer's community:

1. AS 60 Studies on seed cane economy in sugarcane cultivation

Sugarcane growers of South Gujarat heavy rainfall zone, agro ecological situation – III are advised to plant sugarcane crop with two bud sett and 100 per cent (50000 two eye bud) of recommended seed rate for getting higher cane yield and net return.

2. AS 61 Optimizing irrigation schedule in sugarcane under different planting methods (For tropical region)

Sugarcane growers of South Gujarat heavy rainfall zone (AES-III) are advised to plant sugarcane crop with paired cum trench planting (at 30:150 cm row spacing) and to irrigate the crop at 0.9 IW/CPE ratio with 15 irrigations each of 8 cm depth. The first irrigation should be given at the time of planting and rests at 19-20 days interval during winter season and 13-14 days interval during summer season, for getting higher cane yield and net return.

3. AS 63 Plant geometry in relation to mechanization in sugarcane

Sugarcane growers of South Gujarat heavy rainfall zone (AES III) are advised to plant sugarcane setts at 120 cm normal row spacing with variety CoN 05071 for higher remunerative production and mechanization in sugarcane cultivation.

8.2 Entomology

Recommendation for scientific community

1. Sugarcane genotypes viz., CoSnk 05104, CoVSI 05122, CoN 05071, 2004 N 492, CoVSI 05123 and Co 05001 were found less susceptible against early shoot borer and top borer under natural condition.
2. Sugarcane genotypes viz., 2004 N 492 was found less susceptible against scale insect where as, Sugarcane genotypes viz., 2004 N 492 and CoSnk 05101 was found moderately susceptible against mealy bugs under natural condition
3. Sugarcane genotypes Viz., Co 08008, Co 08020, Co 08001 and 2007 N 469 were found less susceptible against early shoot borer.
4. Sugarcane genotypes Viz., Co 08008, 2007 N 535, 2007 N 469, CoSnk 08101, Co 08016 and VSI 08122 were found less susceptible against scale insect.

8.3 Plant pathology

Recommendation for scientific community

1. Sugarcane varieties Co 05001, CoSnk 03754, Co 0416, 2004 N 596 and 2004 N 663 showed moderately resistant reaction to wilt disease. Sugarcane varieties Viz., Co 05001, CoVSI 05121, CoVSI 05123, 2004 N 596 and 2004 N 663 was found to be moderately resistant to red rot in plug and nodal method.
2. Sugarcane varieties Co 07008 and Co 07009 showed resistant reaction. While, Co 07012, PI 07131 and Co 07010 exhibited moderately resistant reaction against smut disease.
3. Sugarcane Varieties Co 07008 and Co 07009 showed resistant reaction. While, Co 07012, PI 07131 and Co 07010 exhibited moderately resistant reaction against smut disease.
4. Sugarcane varieties viz., Co 08008, CoSnk 08101, PI 08131, 2007 N 469, Co 94008, and Co 99004, were found moderately resistant to red rot by plug method.
5. Sugarcane Varieties Co 08020, CoSnk 08101, Co 94008, 2007 N 535, 2007 N 469, 2007 N 390, 2007 N 510 and Co 6806 showed resistant reaction. While, Co 08001, VSI 08121, Co 08016 exhibited moderately resistant reaction against smut disease.
6. Sugarcane varieties/genotypes Co 10005, Co 10006, Co 10027, CoT 10367, Co 09004, Co 09009, Co 10015, Co 10031, CoT 10368, PI 10132, CoN 14071, CoN 14072, CoN 14073 and CoN 14074 were showed moderately resistant reaction against wilt disease in sick soil and artificial inoculation.
7. Sugarcane varieties viz., Co 11001, Co 11004, CoM 11084, Co 11007, Co 11019, Co 94008 and CoN 05071 were found to be moderately resistant to red rot.

8. Sugarcane varieties viz., Co 11001, CoM 11082, Co 11005 and CoM 11085 were showed resistant reaction and variety Co 11012 exhibited moderately resistant reaction against whip smut disease.
9. Sugarcane elite and ISH genotypes, only SES 594 gave resistant reaction. While, ISH 58, ISH 100, ISH 111, ISH 114, ISH 115, ISH 117, ISH 118, ISH 147, ISH 267, MA 5/22, AS 04 1687, GU 07 2276, CyM 07 986, BM 101068 and SA 04 545 were exhibited resistant reaction against red rot disease.
10. Sugarcane varieties viz., Co 11001, Co 11004, CoM 11084, Co 11007, Co 11019, Co 94008 and CoN 05071 were found to be moderately resistant to red rot.
11. Sugarcane varieties viz., Co 11001, CoM 11082, Co 11005 and CoM 11085 were showed resistant reaction and variety Co 11012 exhibited moderately resistant reaction against whipsmut disease.