ACHARYA N. G. RANGA AGRICULTURAL UNIVERSITY

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Roc.No.A/487 /2014,dated,31.05.2014

To
The Project Coordinator (Sugarcane),
All India Coordinated Research Project on Sugarcane,
Indian Institute of Sugarcane Research,
Rae – Bareli Road,
P.O.Dilkusha,
LUCKNOW – 226 002

Sir,

Sub: RARS, Anakapalle – Submission of AICRP Annual report for the year 2013-2014.
Ref: F.No.17-33/2014-PCS, dated 07.5.2014 of the Project Coordinator, IISR, Lucknow.

I submit to enclose herewith the AICRP Annual report for the year 2013-2014 along with a soft copy in the prescribed proforma and data sheets (replicated data in MS Excel) pertaining to plant breeding department; Regional Agricultural Research Station, Anakapalle.

Yours faithfully

K. Veerabhadra Rao 31/5/14

Associate Director of Research

31/5/14 31/5/14

Encl: 1. AICRP Annual report (CD along with hard copy)
2. Data sheets (Replicated data in MS Excel)

Copy communicated to Principal Scientist (Sugarcane) for favour of information.

Acharya N.G. Ranga Agricultural University

AICRP ON SUGARCANE

Annual Report

of

Genetics & Plant Breeding

2013-2014

Regional Agricultural Research Station,
Anakapalle – 531 001, Visakhapatnam District (A.P)

PLANT BREEDING

Detailed report on experiment wise

I.	**Project No.**	:	B IV fluff supply programme P2 – 2013 / 1 / AHD / F30 / H10 / H20 / 0230
II.	**Project Title**		Evolving improved sugarcane genotypes suitable for different agro-climatic zones of Andhra Pradesh – Seedling nursery
III.	**Serial number of the year of Experimentation**	:	I
IV.	**Location**	:	Regional Agricultural Research Station, Anakapalle
V.	**Objective**	:	To screen and isolate promising genotypes from population of true seed for further testing in settling nursery.
VI.	**Technical Programme on which the report is based.**	:	Based on location specific problems and needs of farmers and sugar industry in different agro-climatic zones of the state.
VII.	**Discipline wise – technical report**	:	
	a. Date of transplanting	:	14.6.2013, 15.6.2013 and 17.6.2013
	b. Varieties	:	9403 seedlings from 39 station crosses, 11 zonal crosses, 11 PCs and 44 GCs.
	c. Fertilizer application	:	100 kg P_2O_5 + 120 kg K_2O / ha basal. 112 kg N in two splits, Viz., 30 Per cent at 10 DAP and 70 Per cent at 60 DAP.

d. Cultural practices :

Hand weeding and hoeing	:	6.7.2013, 8.7.2013, 9.7.2013, 10.7.2013, 11.7.2013, 12.7.2013, 15.7.2013, 16.7.2013 to 19.7.2013, 22.7.2013, 23.7.2013, 25.7.2013, 26.7.2013, 29.7.2013, 29.7.2013 and 30.7.2013.
Inter cultivation	:	3.9.2013 and 4.9.2013
Rectification of cross channels	:	14.9.2013 and 15.9.2013
Earthing up	:	9.10.2013, 12.10.2013, 15.10.2013 and 17.10.2013
Removal of flower weeds	:	28.10.2013, 29.10.2013, 30.10.2013, 31.10.2013, 1.11.2013 and 2.11.2013.
I Tier TT propping	:	19.10.2013, 21.10.2013, 22.10.2013, 26.10.2013 and 28.10.2013 to 31.10.2013
II Tier TT Propping	:	1.11.2013 to 6.11.2013, 8.11.2013, 11.11.2013, 12.11.2013, 14.11.2013, 15.11.2013 ,18.11.2013 to 23.11.2013 and 25.11.2013
III Tier TT Propping	:	1.1.2014, 17.1.2014 and 27.1.2014.

e. Irrigations	:	Irrigation at alternate days till establishment and once in six days during formative phase and once in 18 days during maturity.
f. Plant protection	:	Need based
g. Date of harvest	:	26.4.2014
h. Plot size	:	Furrows of 10m length with 80 cm between furrow
i. Layout	:	ARCBD
j. Replications	:	Non – replicated spaced planted trial.
k. Total experimental area		1.50 acres

l. Name and designation of the participants : 1. Dr.K.Prasada Rao, Principal Scientist (Plant Breeding)
2. Dr.D.Adilakshmi, Senior Scientist (Plant Breeding)
3. Dr.M.Charumathi, Senior Scientist (Plant Breeding)

m. Results recorded during the previous year :

During 2012-13 a total quantity of 1142.29 g of fluff was received from SBI, Coimbatore. A total number of 14,213 seedlings were transplanted from 19 station crosses, 11 Zonal crosses, 13 PCs and 23 General crosses, of which 6,250 seedlings survived in the main field with an average survival percentage of 43.97.

Three hundred and sixty nine genotypes were selected from seedling nursery based on desired morphological characters and HR Brix values. Maximum number of genotypes were selected in Co 8371 GC(41),Co8371 X Co V 92102 (32),Co7219XCo775(24) andCo740XCoC671(21). No of canes per clump ranged from 2.00 (Co775 GC) to 10.00 (Co Jaw 270 GC). Among the selected clones HR Brix values ranged from 22.10 (BO 91) to 26.60 per cent (Co 6304 x Co A 7602). Cane length ranged from 2.21 (ISH100 PC) to 2.88m (CoLk 8102 GC), Cane girth ranged from 2.20 (Co Jaw 270 GC) to 2.81cm (Co775GC). Single cane weight ranged from 0.97 (Co 2000-10 PC) to 1.27 kg (CoA 92081xCo94008).

n. Results obtained during the year :

During 2013-14, a total quantity of 2114.50 g of fluff was received from SBI, Coimbatore. A total number of 9403 seedlings were transplanted from 39 station crosses, 11 Zonal crosses, 11 PCs and 44 General crosses, of which 6,888 seedlings survived in the main field with an average survival percentage of 73.25. (Table 1&2).

Three hundred and fifty five genotypes were selected from seedling nursery based on desired morphological characters and HR Brix values. Maximum no of genotypes were selected in Co 8371X Co775 (46) followed by Co T 8201 X ISH 229 (34) and CoV 89101 x ISH 69 (33). The range of different characters recorded are furnished in Table 2.Number of clones per clump ranged from 3.00 (Co Jaw 270 X Co Se 92423) to 7.44 (Co 1148 X ISH 229), Brix 21.67 (97 R 401X Co Se 92423) to 27.00 (Co 2000-10 X Co 62198), Cane length (m) ranged from 2.26 (Co 8371 X Co 775) to 2.80 (CoT 8201 X ISH 229), Cane girth ranged from (cm) 2.10 (Co 1148 X ISH 229) to 2.67 (Co 270 x Co Se 92423), Single cane weight ranged from (kg) 0.970 (Co 8371 X Co 775) to 1.209 (CoT 8201 GC) (Table 3).

VIII Technical programme of the year next to the reporting year:

The fluff of 30 station crosses, 11 zonal crosses, 12 poly crosses and 24 GCs was received from Sugarcane Breeding Institute, Coimbatore will be studied during 2014-15.

IX Technical summary of the individual reporting year :

During 2013-14 a total quantity of 2114.50 g of fluff was received from SBI, Coimbatore. A total number of 9403 seedlings were transplanted from 39 station crosses, 11 Zonal crosses, 11 PCs and 44 General crosses. Out of 9403 seedlings planted 6,888 seedlings survived in the main field with an average survival percentage of 73.25.

Three hundred and fifty five genotypes were selected from seedling nursery based on desired morphological characters and HR Brix values. Maximum no of genotypes were selected in Co 8371X Co775 (46) followed by Co T 8201 X ISH 229 (34) and CoV 89101 x ISH 69 (33). The range of different characters recorded furnished in Table 2. Number of clones per clump ranged from 3.00 (Co Jaw 270 X Co Se 92423) to 7.44 (Co 1148 X ISH 229), Brix 21.67 (97 R 401X Co Se92423) to 27.00 (Co 2000-10 X Co 62198), Cane length (m) ranged from 2.26 (Co 8371 X Co 775) to 2.80 (CoT 8201 X ISH 229), Cane girth ranged from (cm) 2.10 (Co 1148 X ISH 229) to 2.67 (Co 270 x Co Se 92423), Single cane weight ranged from (kg) 0.970 (Co 8371 Co 775) to 1.209 (CoT 8201 GC).

X Salient findings.

Three hundred and fifty five genotypes were selected from seedling nursery based on desired morphological characters and HR Brix values. Maximum no of genotypes were selected in Co 8371X Co775 (46) followed by Co T 8201 X ISH 229 (34) and CoV 89101 x ISH 69 (33).Number of clones per clump ranged from 3.00 (Co Jaw 270 X Co Se 92423) to 7.44 (Co 1148 X ISH 229), Brix 21.67 (97 R 401X Co Se92423) to 27.00 (Co 2000-10 X Co 62198), Cane length (m) ranged from 2.26 (Co 8371 X Co 775) to 2.80 (CoT 8201 X ISH 229), Cane girth ranged from (cm) 2.10 (Co 1148 X ISH 229) to 2.67 (Co 270 x Co Se 92423), Single cane weight ranged from (kg) 0.970 (Co 8371 Co 775) to 1.209 (CoT 8201 GC).

Table 1. Details of seedling nursery 2013-2014

S. No	Cross/GC/PC	Quantity of fluff received in gm	No. of seedlings obtained	No. of seedlings/gm of fluff	No. of seedlings survived	Survival %
	Station crosses					
1	CoA93082xCoC8001	18.5	Germination failed			
2	ISH100XCoS90269	19.5	275	14.10	231	84.00
3	CoJaw270xCoA93082	20.5	Germination failed			
4	CoA93082xCo8213	8.0	31	3.87	30	96.77
5	CoJaw270xISH69	13.5	Germination failed			
6	CoA93082xB091	10.5	Germination failed			
7	CoJaw270xCoS90269	10.0	Germination failed			
8	CoA92081xISH69	21.5	Germination failed			
9	Co98008xCo1148	17.0	425	25	295	69.42
10	CoA09321xCoC8001	21.0	2	0.09	2	100.00
11	CoA92081xCoC8001	9.5	125	13.16	113	90.40
12	CoA90081xCoS510	21.0	9	0.11	1	11.11
13	ISH100xCoJaw270	41.0	68	1.66	49	72.06
14	97R401xCoC8001	16.5	294	17.82	144	48.98
15	Co89029xCo1148	33.0	350	10.61	273	78.00
16	CoA92081xCo8213	3.0	Germination failed			
17	CoV89101xCo97015	8.5	150	17.65	99	66.00
18	97R401xCoSE92423	9.5	194	20.42	112	57.73
19	CoV89101xCoC8001	25.5	399	15.65	322	80.70
20	MS6847xCoV89101	40.5	429	10.59	347	80.88
21	CoA09321xCoSe92423	14.0	16	1.14	16	100.00
22	CoA92081xCoPant 97222	8.5	Germination failed			
23	CoJaw270xCoA92081	8.5	Germination failed			
24	CoV94101xCo62198	23.5	4	0.17	3	75.00
25	Co2000-10xCo62198	19.5	4	0.2	4	100.00
26	CoJaw270xCoSe92423	15.0	2	0.13	2	100.00
27	CoA90081xCoSe92423	18.5	Germination failed			
28	97R401xCoV92102	22.5	94	4.18	79	84.04
29	ISH100xMS6847	18.5	118	6.38	109	92.37
30	CoA92082xB091	23.0	119	5.17	110	92.44
31	CoJaw270xCo8371	12.5	Germination failed			
32	CoA09321xCo1148	10.0	5	0.5	1	20
33	CoH119xISH229	21.5	193	8.98	146	75.65
34	ISH100xCoV92102	14.5	83	5.72	74	89.16
35	Co1148xISH229	23.0	235	10.22	133	56.59
36	97R401xISH229	19.5	14	0.72	13	92.86
37	ISH100xCOO9020	20.0	66	3.30	63	95.45
38	CoC8201xISH229	16.0	325	20.31	229	70.46
39	Co94005xCoSe92423	8.0	100	12.5	90	90.00
	Zonal crosses					
1.	CoA92081xCoV92102	13.5	171	12.67	126	73.68
2.	CoV89101xISH69	18.5	292	15.78	181	61.99
3.	Co8371xCo775	17.5	650	37.14	263	40.46
4.	ISH100xC81615	16.0	Germination failed			
5.	Co6304xCoA7602	12.0	325	27.08	106	36.61
6.	CoA92081xCoT8201	8.5	113	13.29	81	71.68

7.	CoV89101xCoT8201	10	190	19.00	102	53.68
8.	CoA92081xCo94008	3.5	48	13.71	37	77.08
9.	CoV89101xCoA7602	7	112	16	81	72.32
10.	CoC90063xCo94008	1.5	5	3.33	4	80.0
11.	Co740xCoC671	7	5	0.71	5	100.0
	PC's					
1	Co8371	13	122	9.38	90	73.77
2	CoC671	10.50	Germination failed			
3	Co7201	5.00	Germination failed			
4	Co2000-10	29.50	13	0.44	11	84.61
5	CoV89101	11.0	93	8.45	78	83.87
6	CP52-68	1.0	3	3	3	100.00
7	ISH100	8.50	59	6.94	53	89.83
8	CoM 0265	5.5	12	2.18	9	75.00
9	Co94012	4.0	Germination failed			
10	CoA7602	11.0	Germination failed			
11	Co85002	12.0	214	17.83	162	75.70
	GC's					
1	CoA90081	123	164	1.33	131	79.88
2	Co98010	14.5	56	3.86	47	83.93
3	Co8013	125	268	2.14	237	88.43
4	CoC671	25	47	1.88	43	91.49
5	B091	8	Germination failed			
6	97R401	12	Germination failed			
7	ISH41	80	275	3.44	245	89.09
8	Co8316	28	31	1.11	30	96.77
9	CoA92081	7	Germination failed			
10	Co85002	31	118	3.81	101	85.59
11	ISH100	22.5	25	1.11	22	88.00
12	ISH1	52	618	11.88	472	76.37
13	Co91019	24	20	0.833	20	100.00
14	Coo5011	14.5	Germination failed			
15	70A2 GC	61	42	0.69	42	100.00
16	CoA93082	8.5	Germination failed			
17	CoH119	98	Germination failed			
18	Co8208	18.5	20	1.08	20	100.00
19	MS6847	74	Germination failed			
20	CoC8201	102	Germination failed			
21	Co87271	12.5	Germination failed			
22	ISH127	8	Germination failed			
23	NB94-545	12.5	95	7.6	82	86.31
24	Co92002	14.5	Germination failed			
25	CO89029	6	50	8.33	43	86.00
26	CoJAw270	10	Germination failed			
27	Co98008	13	Germination failed			
28	Co8353	16.5	55	3.33	47	85.45
29	Co88025	19.5	Germination failed			
30	CooR05546	9	Germination failed			
31	CoV94101	36.5	108	2.96	91	84.26
32	Co8318	14	214	15.28	177	82.71
33	CoJN80151	27.5	105	3.82	89	84.76
34	69A5	24.5	Germination failed			
35	CoT8201	6	234	39	204	87.18

36	Co86010	4.5	Germination failed			
37	CoA92082	31.5	Germination failed			
38	ISH280	1.5	77	51.33	64	83.17
39	ISH170	2	95	47.50	80	84.21
40	CP52-1	4	Germination failed			
41	CoLK94184	8.5	30	3.53	27	90.00
42	Co8371	13	Germination failed			
43	Co98006	7	100	14.28	92	92.00
44	CoS8432	3.5	Germination failed			
	Total	2144.50	9403	4.38	6888	73.25

Table 2. Survival percentage seedlings in Seedling Nursery (2013-14)

Cross/ GC/PC	Total crosses/ GCs PCs	No. of crosses GCs PCs germinated	No of crosses GCs/PCs failed to germinate	Quantity of fluff received in grams	No. of seedlings obtained	No. of seedlings/ gram of fluff	No. of seedlings survived	Survival per cent
Station crosses	39	28	11	684.50	4129	6.03	3090	74.84
Zonal crosses	11	10	1	115.00	1911	16.62	986	51.60
PCs	11	7	4	111.00	516	4.65	406	78.68
GCs	44	23	21	1234	2847	2.31	2406	84.51
Total	**105**	**68**	**37**	**2144.50**	**9403**	**4.38**	**6888**	**73.25**

Table 3. Performance of selected clones in seedling nursery (2013-14)

S. No	Name of the cross	No. of selections	Genotypes range	No of canes/ clump	Brix %	Cane length (mt)	Cane girth (cm)	Single cane weight(kg)
1	Co8371xCo775	46	2014A1to2014A46	5.09	22.87	2.26	2.31	0.970
2	CoA92081xCoV92102	17	2014A47to2014A63	3.71	25.47	2.40	2.26	1.088
3	CoV89101xCoA7602	13	2014A64to2014A76	7.38	24.63	2.45	2.25	1.077
4	CoA92081xCoT8201	9	2014A77to2014A85	4.89	24.00	2.65	2.31	1.074
5	Co6304xCoA7602	15	2014A86to2014A100	6.33	22.53	2.65	2.27	1.065
6	Co89101xCoT8201	22	2014A101to2014A122	5.68	24.82	2.55	2.23	1.048
7	CoV89101xISH69	33	2014A123to2014A155	4.42	25.03	2.40	2.22	1.004
8	CoA92081xCo94008	6	2014A156to2014A161	5.00	24.33	2.6	2.17	1.085
9	ISH100xCoJ270	4	2014A162to2014A165	7.00	23.0	2.50	2.3	1.045
10	CoH119xISH229	20	2014A166to2014A185	4.75	22.95	2.41	2.50	0.985
11	Co1148xISH229	9	2014A186to2014A194	7.44	22.89	2.64	2.10	1.019
12	Co94005xCoSe92423	6	2014A195to2014A200	5.0	22.50	2.61	2.2	1.049
13	ISH100xCoS90269	3	2014A201to2014A203	5.0	22.67	2.61	2.13	1.085
14	CoV89101xCoC8001	7	2014A204to2014A210	7.0	23.14	2.27	2.18	1.051
15	97R401xCoV92102	3	2014A211to2014A213	6.0	22.00	2.5	2.48	1.055
16	ISH100xCoV92102	2	2014A214and2014A215	4.00	24.50	2.53	2.32	1.035
17	CoA93082xCo8213	6	2014A216to2014A221	3.17	23.33	2.45	2.30	1.073
18	CoA92082xBo91	6	2014A222to2014A227	4.00	23.50	2.40	2.18	1.027

19	Co89029xCo1148	6	2014A228A2014A233	6.00	23.50	2.47	2.25	0.992
20	Co98008xCo1148	10	2014A234to2014A243	5.0	23.50	2.66	2.14	1.057
21	CoV89101xCo97015	9	2014A244to2014A252	5.33	24.89	2.71	2.24	1.054
22	91R401xCoC8001	9	2014A253to2014A261	5.33	24.67	2.47	2.41	1.082
23	CoT8201xISH229	34	2014A262to2014A295	4.03	24.41	2.80	2.47	1.065
24	97R401xCoSe92423	3	2014A296to2014A298	5.67	21.67	2.53	2.38	1.153
25	ISH100xMS6847	20	2014A299to2014A318	4.14	23.00	2.46	2.24	1.021
26	ISH100xCo09020	6	2014A319to2014A324	4.67	23.00	2.46	2.3	1.026
27	CoA92081xCoC8001	10	2014A325to2014A334	5.00	23.60	2.59	2.35	1.043
28	MS6847xCoV89101	12	2014A335to2014A346	3.83	22.83	2.50	2.64	1.058
29	CoA09321xCoSe92423	2	2014A347and2014A348	4.5	25.50	2.65	2.33	1.014
30	Co2000-10xCo62198	1	2014A349	3.0	27.0	2.48	2.43	1.142
31	CoJaw270xCoSe92423	1	2014A350	7.0	27.00	2.59	2.67	1.023
32	ISH1GC	3	2014A351to2014A353	3.33	24.67	2.48	2.40	1.104
33	CoT8201GC	1	2014A354	3.00	23.00	2.59	2.50	1.209
34	CoV89101PC	1	2014A355	3.00	26.00	2.52	2.3	1.142

I.	**Project No.**	:	B IV fluff supply programme P2 – 2013 / 2 / AHD / F30 / H10 / H20 / 02301
II.	**Project Title**	:	Evolving improved sugarcane genotypes suitable for different agro-climatic zones of A.P. –Settling nursery
III.	**Serial number of the year of Experimentation**	:	II
IV.	**Location**	:	Regional Agricultural Research Station, Anakapalle
V.	**Objective**	:	To identify superior clones for further study in selection nursery.
VI.	**Technical Programme on which the report is based**	:	Based on location specific needs and problems identified in Zonal Research and Extension Advisory Council Meetings and diagnostic team visits.
VII.	**Discipline wise – technical report**	:	
	a. Date of planting	:	4.4.2013 and 9.4.2013
	b. Varieties	:	369 genotypes selected from seedling nursery raised during 2012 – 13
	c. Fertilizer application	:	112 kg N + 100 kg P_2O_5 + 120 kg K_2O / ha
	d. Cultural practices	:	Hand weeding and hoeing : 10.5.2013, 11.5.2013, 12.5.2013, 15.6.2013, 17.6.2013 and 18.6.2013 Inter cultivation : 15.7.2013 and 19.7.2013 Rectification of cross channels : 16.7.2013 and 20.7.2013 Earthing up : 10.8.2013 and 11.8.2013 Removal of flower weeds : 28.8.2013 to 31.8.2013 and 18.1.2014 I Tier TT propping : 14.9.2013, 16.9.2013 and 18.9.2013 II Tier TT Propping : 10.10.2013, 18.10.2013, 28.10.2013 and 30.10.2013 III Tier TT Propping : 1.11.2013, 2.11.2013, 16.11.2013 and 26.11.2013
	e. Irrigations	:	Once in a week during formative phase and once in 18 days during maturity phase.
	f. Plant protection	:	---
	g. Date of harvest	:	21.4.2014
	h. Plot size	:	2.5 m x 0.8 m x 2R = 4.0m^2
	i. Layout	:	ARCBD
	j. Replications	:	Nil
	k. Total experimental area	:	0.75 ac
	l. Name and designation of the participants	:	1. Dr.K.Prasada Rao, Principal Scientist (Plant Breeding) 2. Dr.D.Adilakshmi, Senior Scientist (Plant Breeding) 3. Dr.M.Charumathi, Senior Scientist (Plant Breeding)

m. Results obtained during the previous year:

Out of 357 genotypes studied in settling nursery during 2012-13, 104 clones were selected based on morphological features and HR brix values. Cane yield ranged from 92.50 t/ha (2012 A 120) to 145 t/ha (2012 A 325). Among the selected clones ten clones viz., 2012 A 28, 2012 A 38, 2012 A 113, 2012 A 128, 2012 A 136, 2012 A 144, 2012 A 193, 2012 A 197, 2012 A 325 and 2012 A 332 recorded cane yield more than 130 t/ha in comparison with the standards Co 6907 (102.50 t/ha) and Co 7219 (100.00 t/ha).

The clones 2012 A 144 (132.5 000'/ha) and 2012 A 332 (130.00 thousands /ha) recorded higher NMC, while the clones 2012 A 145 (24.26%) and 2012 A 170 (24.00%) recorded higher HR brix. The clones 2012 A 113 (30.52), 2012 A 354 (30.16) and 2012 A 325 (30.06) recorded brix yield of more than 30.00 t/ha.

n. Results obtained during the year :

Out of 369 genotypes studied in settling nursery during 2013-14, 93 clones were selected based on morphological features and HR brix values. Cane yield (t/ha) ranged from 100.00 (2013 A 106) to 155 t/ha (2013 A 135). Among the selected clones ten clones viz., 2013 A 6, 2013 A 13, 2013 A 37, 2013 A 131, 2013 A 135, 2013 A 150, 2013 A 158, 2013 A 179 and 2013 A 273 recorded cane yield more than 140 t/ha in comparison with the standards Co 6907 (107.50 t/ha) and Co 7219 (105.00 t/ha).

The NMC ranged from 1.0 lakh (2013 A 226) to 1.45 lakh ha (2013 A135) while HR Brix ranged from 19.00 (2013 A 121) to 26.33 (2013 A 118). The Brix yield ranged from 21.86 (2013 A 277) to 39.79 t/ha (2013 A 135) (Table 4).

IX. Technical summary of the individual reporting year

Out of 369 genotypes studied in settling nursery during 2013-14, 93 clones were selected based on morphological features and HR brix values. Cane yield (t/ha) ranged from 100.00 (2013 A 106) to 155 (2013 A 135). Among the selected clones ten clones viz., 2013 A 6, 2013 A 13, 2013 A 37, 2013 A 131, 2013 A 135, 2013 A 150, 2013 A 158, 2013 A 179 and 2013 A 273 were recorded cane yield more than 140 t/ha in comparison with the standards Co 6907 (107.50 t/ha) and Co 7219 (105.00 t/ha).

The NMC ranged from 1.0 lakh (2013 A 226) to 1.45 lakh ha (2013 A135) while HR Brix ranged from 19.00 (2013 A 121) to 26.33 (2013 A 118). The Brix yield ranged from 21.86 (2013 A 277) to 39.79 t/ha (2013 A 135).

X. Salient findings.

Out of 369 genotypes studied in settling nursery during 2013-14, 93 clones were selected based on morphological features and HR brix values. Cane yield (t/ha) ranged from 100.00 (2013 A 106) to 155 (2013 A 135). Among the selected clones ten clones viz., 2013 A 6, 2013 A 13, 2013 A 37, 2013 A 131, 2013 A 135, 2013 A 150, 2013 A 158, 2013 A 179 and 2013 A 273 were recorded cane yield more than 140 t/ha in comparison with the standards Co 6907 (107.50 t/ha) and Co 7219 (105.00 t/ha). Millable stalk population at harvest ranged from 1.0 lakh (2013 A 226) to 1.45 lakh /ha (2013 A135). HR Brix ranged from 19.00 (2013 A 121) to 26.33 (2013 A 118) and the Brix yield ranged from 21.86 (2013 A 277) to 39.79 t/ha (2013 A 135).

Table 4. Performance of selected clones in Settling Nursery 2013-14

S. No	Clone No	Pedigree	NMC (000/ha)	Cane yield (t/ha)	HR Brix (%)	Brix yield (t/ha)
1	2013A3	Co8013xCoC671	105.0	115.0	25.0	28.75
2	2013A4	Co8013xCoC671	112.5	122.5	24.67	30.22
3	2013A5	Co8013xCoC671	120.0	125.0	24.0	30.00
4	2013A6	Co8013xCoC671	120.0	140.0	25.33	35.46
5	2013A7	Co8013xCoC671	125.0	132.5	23.67	31.36
6	2013A9	Co8013xCoC671	130.0	135.0	24.67	33.30
7	2013A10	Co8013xCoC671	112.5	125.0	23.0	28.75
8	2013A11	Co8013xCoC671	110.0	115.0	23.67	27.22
9	2013A12	Co8013xCoC671	115.0	130.0	24.33	31.63
10	2013A13	Co8013xCoC671	137.5	145.0	23.0	33.35
11	2013A18	Co7219xCo775	127.5	132.5	24.0	31.80
12	2013A19	Co7219xCo775	115.0	120.0	23.67	28.40
13	2013A21	Co7219xCo775	115.0	125.0	23.33	29.16
14	2013A23	Co7219xCo775	100.0	107.5	23.67	25.44
15	2013A27	Co7219xCo775	110.0	120.0	24.33	29.20
16	2013A28	Co7219xCo775	120.0	125.0	23.33	29.16
17	2013A29	Co7219xCo775	105.0	120.0	24.67	29.60
18	2013A32	Co7219xCo775	110.0	115.0	22.67	26.07
19	2013A33	Co7219xCo775	115.0	125.0	22.0	27.50
20	2013A35	Co7219xCo775	105.0	115.0	24.0	27.60
21	2013A37	Co7219xCo775	137.5	145.0	22.0	31.90
22	2013A39	Co7219xCo775	100.0	110.0	22.0	24.20
23	2013A41	Co7219xCo775	105.0	115.0	23.0	26.45
24	2013A44	CoA92081xCoV92102	107.5	115.0	23.33	26.83
25	2013A46	CoA92081xCoV92102	110.0	115.0	24.0	27.60
26	2013A47	CoA92081xCoV92102	115.0	120.0	22.67	27.20
27	2013A48	CoA92081xCoV92102	125.0	130.0	21.33	27.73
28	2013A54	CoA92081xCoV92102	100.0	115.0	22.67	26.07
29	2013A61	Co8371xCoV92102	115.0	120.0	24.67	29.60
30	2013A64	Co8371xCoV92102	112.5	125.0	23.33	29.16
31	2013A75	Co8371xCoV92102	97.5	110.0	24.0	26.40
32	2013A78	Co8371xCoV92102	115.0	130.0	23.67	30.77
33	2013A83	Co8371xCoV92102	100.0	112.5	23.67	26.63
34	2013A90	Co8371xCoV92102	100.0	105.0	24.0	25.20
35	2013A97	CoA92082xCoPANT92214	125.0	132.5	21.33	28.26
36	2013A102	CoA92082xCoPANT92214	110.0	115.0	22.67	26.07
37	2013A106	CoA92082xCoPANT92214	95.0	100.0	24.33	24.33
38	2013A118	CoV89101xCo1148	100.0	107.5	26.33	28.3
39	2013A121	ISH100xCo94008	12.0	125.0	19.0	23.75
40	2013A130	Co740xCoC671	102.5	110.0	26.0	28.60
41	2013A131	Co740xCoC671	137.5	145.0	24.33	35.28
42	2013A134	Co740xCoC671	105.0	110.0	21.33	23.46
43	2013A135	Co740xCoC671	145.0	155.0	25.67	39.79
44	2013A136	Co740xCoC671	110.0	125.0	23.0	28.75
45	2013A137	Co740xCoC671	115.0	120.0	20.0	24.0
46	2013A138	Co740xCoC671	120.0	130.0	21.33	27.73
47	2013A141	Co740xCoC671	112.5	120.0	20.33	24.4
48	2013A150	Co740xCoC671	120.0	140.0	23.67	33.14
49	2013A151	Co6304xCoS8436	120.0	127.50	22.33	28.47
50	2013A153	Co6304xCoS8436	105.0	115.0	19.67	22.62

51	2013A154	Co6304xCoS8436	120.0	130.0	24.00	31.20
52	2013A158	Co6304xCoS8436	115.0	145.0	23.00	33.35
53	2013A162	Co740xCoC671	107.0	120.0	22.0	26.40
54	2013A164	CoC90063xCo94008	100.0	110.0	24.0	26.40
55	2013A166	CoV89101xISH69	112.5	120.0	22.0	26.40
56	2013A177	CoV89101xCo78201	112.5	120.0	25.0	30.0
57	2013A179	CoV89101xCo78201	137.5	145.0	24.33	35.28
58	2013A180	CoV89101xCo78201	115.0	125.0	23.67	29.59
59	2013A181	CoV89101xCo78201	115.0	120.0	23.0	27.62
60	2013A183	CoV89101xCo78201	110.0	120.0	22.33	26.8
61	2013A184	CoV89101xCo78201	107.5	115.0	23.67	27.22
62	2013A188	CoV89101xCo78201	100.0	110.0	22.0	24.2
63	2013A190	CoV89101xCo78201	125.0	135.0	22.67	30.6
64	2013A193	CoV89101xCo78201	115.0	127.5	22.67	28.9
65	2013A194	CoV89101xCo78201	115.0	120.0	24.0	28.8
66	2013A197	CoV89101xCo78201	115.0	130.0	24.33	31.63
67	2013A205	CoA92081xCo782012	120.0	125.0	22.33	27.91
68	2013A211	CoA92081xCo78201	105.0	115.0	21.67	24.92
69	2013A212	CoA92081xCo78201	105.0	115.0	21.67	24.92
70	2013A214	CoA92081xCoV92102	110.0	120.0	22.67	27.2
71	2013A216	CoA92081xCoV92102	105.0	115.0	23.67	27.22
72	2013A217	CoA92081xCoV92102	107.5	115.0	25.0	28.75
73	2013A218	Co6304xCoA7602	105.0	110.0	22.33	24.56
74	2013A220	Co6304xCoA7602	110.0	115.0	22.33	25.68
75	2013A222	Co6304xCoA7602	105.0	115.0	22.33	25.68
76	2013A226	Co8371xCo775	100.0	102.5	21.67	22.21
77	2013A230	Co8371xCo775	112.5	120.0	21.67	26.0
78	2013A234	ISH100PC	105.0	110.0	21.33	23.46
79	2013A235	ISH100PC	107.5	115.0	22.33	25.68
80	2013A239	ISH100PC	100.0	105.0	22.67	23.80
81	2013A241	Co94012PC	105.0	115.0	21.67	24.92
82	2013A242	CoC671PC	107.5	120.0	23.33	27.30
83	2013A264	CoS8486GC	120.0	130.0	23.0	29.90
84	2013A273	CoS8486GC	132.5	140.0	19.33	27.06
85	2013A276	CoS8486GC	100.0	115.0	22.33	25.68
86	2013A277	CP52-68PC	100.0	102.5	21.33	21.86
87	2013A295	Co8371PC	125.0	127.5	21.33	27.19
88	2013A318	CoS8432GC	100.0	110.0	21.33	23.46
89	2013A326	Co8371GC	115.0	125.0	22.33	27.91
90	2013A338	Co8371GC	100.0	107.5	22.0	23.65
91	2013A343	Co8371GC	107.5	115.0	23.0	26.45
92	2013A346	Co8371GC	105.0	110.0	21.33	23.46
93	2013A355	CoC8001GC	115.0	122.5	22.0	26.95
	Standards					
	Co6907	Co740x Co1287	105.0	107.50	22.0	23.65
	Co7219	Co449xCo658	100.0	105.0	22.33	23.45

I.	**Project No.**	:	B VI fluff supply programme P2 – 2013 / 3 / AHD / F30 / H10 / H20 / 02301
II.	**Project Title**	:	Evolving improved sugarcane genotypes suitable for different agro-climatic zones of A.P – Selection Nursery
III.	**Serial number of the year of Experimentation**	:	III
IV.	**Location**	:	Regional Agricultural Research Station, Anakapalle
V.	**Objective**	:	To identify superior clones for further study in preliminary yield trial.
VI.	**Technical Programme on which the report is based**	:	Based on location specific problems and needs identified in ZREAC and SLTP meetings.
VII.	**Discipline wise – technical report**		
	a. Date of planting	:	19.3.2013 and 22.3.2013.
	b. Varieties	:	104 clones selected from settling nursery of 2012-2013
	c. Fertilizer application	:	100 kg P_2O_5 + 120 kg K_2O / ha as basal. 112 kg N in two splits, *viz.*, at 45 DAP and 90 DAP.
	d. Cultural practices	:	

Hand weeding and hoeing	:	19.4.2013, 20.4.2013, 23.5.2013 and 27.5.2013
Inter cultivation	:	16.6.2013 and 17.6.2013
Rectification of cross channels	:	18.6.2013
Earthing up	:	20.7.2013
Removal of flower weeds	:	5.9.2013 to 8.9.2013
I Tier TT propping	:	22.8.2013, 23.8.2013, 24.8.2013, 26.8.2013, 28.8.2013 to 31.8.2013
II Tier TT Propping	:	12.9.2013, 29.9.2013 and 30.9.2013
III Tier TT Propping	:	1.10.2013, 3.10.2013, 4.10.2013, 8.10.2013 and 26.10.2013.

e. Irrigations	:	Once in a week during formative phase and once in 18 days during maturity phase.
f. Date of harvest	:	24.3.2014
g. Plot size	:	5.0 m X 0.8 m X 4 R =16m^2
h. Layout	:	ARCBD
i. Replications		
j. Total experimental area		0.50 ac.

k. Name and designation of the participants	:	1. Dr.K.Prasada Rao, Principal Scientist (Plant Breeding) 2. Dr.D.Adilakshmi, Senior Scientist (Plant Breeding) 3. Dr.M.Charumathi, Senior Scientist (Plant Breeding)

l. Results recorded during the previous year:

Ninety one clones along with two standards were evaluated during 2012 -13 in selection nursery, out of which twenty five clones were selected based on cane yield and other quality parameters. The clones viz., 2011 A 67 (115.62 t/ha), 2011 A 250 (117.50 t/ha) and 2011 A 313 (132.50 t/ha) recorded higher cane yield of more than 115.00 t/ha when compared to the best standard Co 6907 (100.00 t/ha). The clone 2011 A 313 has recorded highest NMC of 118.12 thousands/ha compared to the best standard Co 6907 (98.75 thousands /ha)

The clones 2011 A 34 (19.04%), 2011 A 49 (19.14 %) and 2011 A 313 (19.23%) recorded higher per cent juice sucrose of more than 19.00%, compared to standards Co 6907 (16.63 %) and Co 7219 (17.63 %). The clone 2011 A 313 has recorded highest CCS yield of 18.01 t/ha compared to the best standard Co 7219 (12.72t/ha).

m. Results obtained during the year:

One hundred and four clones along with two standards were evaluated during 2013-14 in selection nursery, of which twenty two clones were selected based on cane yield and other quality parameters. The clones viz., 2012 A 249 (137.50 t/ha), 2012 A 48 (147.5 t/ha) and 201 A 325 (143.75 t/ha) 2012 A 335 (138.13 t/ha), 2012 A 246 (131.25 t/ha) and 2012 A 54 (150.00 t/ha) recorded higher cane yield of more than 130.00 t/ha when compared to the best standard Co 7219 (106.25 t/ha). The clone 2012 A 54 has recorded maximum NMC of 1,37,500 /ha compared to the best standard Co 7219 (1,05,00 000/ha)

The clones 2012 A 335 (20.65 %) and 2012 A 149 (20.65 %) recorded higher per cent juice sucrose of more than 20.00 %, when compared to standard Co 7219 (16.85 %) . The clone 2012 A 54 has recorded highest CCS yield of 21.49 t/ha compared to the best standard Co 7219 (12.81 t/ha). **Table 5**

VIII Technical programme of the year next to the reporting year:

Ninety three clones selected from settling nursery 2013– 14 will be studied in selection nursery during 2014 – 15.

IX. Technical summary of the individual reporting year:

One hundred and four clones along with two standards were evaluated during 2013-14 in selection nursery, out of which twenty two clones were selected based on cane yield and other quality parameters. The clones viz., 2012 A 249 (137.50 t/ha), 2012 A 48 (147.5 t/ha) and 201 A 325 (143.75 t/ha) 2012 A 335 (138.13 t/ha), 2012 A 246 (131.25 t/ha) and 2012 A 54 (150.00 t/ha) recorded higher cane yield of more than 130.00 t/ha when compared to the best standard Co 7219 (106.25 t/ha). The clone 2012 A 54 has recorded maximum NMC of 137.50 thousands/ha compared to the best standard Co 7219 (105.00 thousands/ha)

The clones 2012 A 335 (20.65 %) and 2012 A 149 (20.65 %) recorded higher per cent juice sucrose of more than 20.00 %, when compared to standard Co 7219 (16.85 %) . The clone 2012 A 54 has recorded highest CCS yield of 21.49 t/ha compared the best standard Co 7219 (12.81 t/ha).

X. Salient findings:

One hundred and four clones along with two standards were evaluated during 2013-14 in selection nursery. Out of one hundred and four clones studied twenty two clones were selected based on cane yield and other quality parameters. The clones viz., 2012 A 249 (137.50 t/ha), 2012 A 48 (147.5 t/ha) and 201 A 325 (143.75 t/ha) 2012 A 335 (138.13 t/ha), 2012 A 246 (131.25 t/ha) and 2012 A 54 (150.00 t/ha) recorded higher cane yield of more than 130.00 t/ha when compared to the best standard Co 7219 (106.25 t/ha). The clone 2012 A 54 has recorded maximum NMC of 137.50 thousands/ha compared to the best standard Co 7219 (105.00 thousands/ha. The clones 2012 A 335 (20.65 %) and 2012 A 149 (20.65 %) recorded higher per cent juice sucrose of more than 20.00 %, when compared to standard Co 7219 (16.85 %). The clone 2012 A 54 has recorded highest CCS yield of 21.49 t/ha and proved superior over the best standard Coc 7219 (12.81 t/ha).

Table 5. Performance of selected clones in Selection Nursery during 2013-14

S.No	Clone No.	NMC ('000/ha)	Cane Yield (t/ha)	Juice sucrose (%)	CCS Yield (t/ha)
1	2012 A 249	125.00	137.50	18.84	18.54
2	2012 A48	118.75	147.50	17.65	18.57
3	2012 A325	128.13	143.75	18.36	18.83
4	2012 A335	131.25	138.13	20.65	20.50
5	2012 A340	106.25	116.88	18.36	15.38
6	2012 A246	121.88	131.25	17.58	16.51
7	2012 A271	108.75	118.13	16.22	13.46
8	2012 A319	115.63	128.13	18.81	17.16
9	2012 A277	109.38	112.50	19.86	15.90
10	2012 A264	115.00	126.25	18.25	16.39
11	2012 A149	106.25	116.88	20.65	17.35
12	2012 A279	108.13	120.00	19.00	16.38
13	2012 A23	105.00	113.75	19.62	15.99
14	2012 A119	109.38	113.13	18.00	14.59
15	2012 A124	111.25	125.00	16.12	14.11
16	2012 A54	137.50	150.00	19.93	21.49
17	2012 A302	111.25	121.88	17.35	14.96
18	2012 A145	100.00	109.38	17.05	13.35
19	2012 A120	111.25	116.25	19.15	15.98
20	2012 A223	96.88	106.88	18.00	13.79
21	2012 A26	93.75	109.38	18.86	14.83
22	2012 A287	95.63	105.00	18.24	13.68
	Co 6907	103.13	105.00	16.85	12.09
	Co 7219	105.00	106.25	17.25	12.61

I.	**Project No.**	:	B II Zonal Varietal Trials P2 – 2013 / 4 / AHD / F30 / H10 / H20 / 0230
II.	**Project Title**		Initial Varietal Trial (Early)
III.	**Serial number of the year of Experimentation**	:	IV
IV.	**Location**	:	Regional Agricultural Research Station, Anakapalle
V.	**Objective**	:	To screen and select high yielding and sucrose rich clones from clones poled from different centres of East Coast Zone.
VI.	**Technical Programme on which the report is based**	:	Based on constraints identified in East Coast Zone and deliberation held in the Joint group / workshop in AICRP on Sugarcane.
VII.	**Discipline wise – technical report**	:	
	a. Date of planting	:	02.02.2013
	b. Varieties	:	Five + Three standards CoA 11321, CoA 11322, COA 11323, CoC 10336 and CoC 11336 Standards: Co 6907, CoC 01061, CoA 92081.
	c. Fertilizer application	:	100 kg P_2O_5 + 120 kg K_2O / ha. 112 kg N in two splits i.e. at 45 DAP and 90 DAP
	d. Cultural practices	:	Hand weeding and hoeing : 12.3.2013 and 18.4.2013 Inter cultivation : 25.4.2013 Rectification of cross channels : 22.5.2013 Earthing up : 10.6.2013 Removal of flower weeds : 5.8.2013, 28.9.2013 and 16.10.2013 I Tier TT propping : 1.7.2013 and 3.7.2013 II Tier TT Propping : 16.8.2013 and 20.8.2013 III Tier TT Propping : 28.9.2013 and 1.10.2013
	e. Irrigations	:	Once in a week during formative phase and once in 18 days during maturity phase.
	f. Plant protection	:	Need based
	g. Date of harvest	:	04.01.2014
	h. Plot size	:	Gross : 6.0 m x 1.2 m x 6 R = 43.20 m^2 Net : 5.0 m x 1.2 m x 4 R = 24.0 m^2
	i. Layout	:	RBD
	j. Replications	:	Three
	k. Total experimental area		0.2 ha
	l. Name and designation of the participants	:	1. Dr. M.Charumathi, Senior Scientist (Plant Breeding) 2. Dr.K.Prasada Rao, Principal Scientist (Plant Breeding) 3. Dr.D.Adilakshmi, Senior Scientist (Plant Breeding)

m. Results recorded during the previous year :

Three clones were tested against three checks under Initial Varietal Trials (Early) during 2009-10. Number of millable canes ranged from 93.00 (CoC 07336) to 114.67 thousands/ha (CoA 07321). The clone CoA 07321 recorded maximum number of millable canes (114.67 thousands/ha) at harvest. Cane yield varied from 79.00 (CoC 07336) to 125.33 t/ha (CoA 07321). The clone CoA 07321 was found to be significantly superior over the best standard CoA 92081 (102.33 t/ha) for cane yield. Percent juice sucrose at harvest ranged from 16.13 (CoC 07336) to 17.40 (CoA 92081). The standard CoA 92081 (17.40) was found to be significantly superior over the test clones and other two standards. However, the clone CoA 07321 (16.80) was found superior over the two standards Co 6907 (16.46) and CoC 01061and other test clones but on par with the best standard CoA 92081 for percent juice sucrose. CCS yield ranged from 8.80 (CoC07336) to 14.70 t/ha (CoA 07321). CCS yield of CoA 07321 (14.70t/ha) was significantly superior over the best standard CoA 92081 (12.24t/ha). The clone CoV 07356 (10.90t/ha) was on par with the standard CoC01061 (10.62 t/ha) for CCS yield.

n. Results obtained during the year:

Five clones were tested against three standards under Initial varietal trial (Early) during 2013-14 (Table 6).The clones differed significantly for all characters studied. Number of millable canes ranged from 110.00 thousands/ha (Co 6907) to 143.33 thousands/ha (CoC 01061). The standard CoC 01061 (143.33 thousands/ha) was found to be significantly superior over the test clones and other standards. However, the clones CoC 10336 (137.33 thousands/ha) and CoA 11321 (132.00 thousands/ha) were found to be significantly superior over standards Co 6907 (110.00 thousands/ha) and CoA 92081 (120.00 thousands/ha) for number of millable canes at harvest. Cane yield varied from 108.00 t/ha (CoC 10336) to 150.00 t/ha(CoA 11323). The clone CoA 11323 (150.00 t/ha) was found to be significantly superior over the three standards CoA 92081 (128.00 t/ha), CoC 01061 (121.33 t/ha) and Co 6907 (110.00 t/ha). However, the test clone CoA 11321 (124.00 t/ha) was found to be superior over the two standards CoC 01061 (121.33 t/ha) and Co 6907 (110.00 t/ha) and on par with the best standard CoA 92081 (128.00 t/ha) for cane yield. Per cent juice sucrose values ranged from 17.43 (CoA 11322) to 20.02 per cent (CoA 11323). The clone CoA 11323 (20.02) was found to be superior over the best standard CoA 92081 (19.73) for per cent juice sucrose. However, the clone CoA 11321(18.95) was found to be superior over other standards Co 6907 (18.93) and CoC 01061 (18.10) for per cent juice sucrose at harvest. CCS yield varied from 14.43 (CoC 10336) to 21.59 t/ha (CoA 11323). The clone CoA 11323 (21.59 t/ha) was found to be significantly superior over best standard CoA 92081 (18.22 t/ha). However, the clone CoA 11321 (16.90 t/ha) was found superior over other two standards Co 6907 (14.92 t/ha) and CoC 01061 (15.61 t/ha) for CCS yield recorded at harvest. The clone CoC 10336 recorded significantly higher fibre percentage (16.36), while the clone CoA 11323 (12.81) recorded low fibre percentage at harvest.

Technical programme of the year next to the reporting year:

VIII. CoA 12321, CoA 12322, CoA 12323, CoOr 12346 and CoV 12356 along with three early standards Co 6907, CoC 01061 and CoA 92081 will be studied during 2014 – 15.

IX. Technical summary of the individual reporting year:

The best standard CoC 01061 recorded significantly higher Number of millable canes. However, the test clones CoC 10336 and CoA 11321 recorded maximum number of millable canes and found significantly superior over other standards Co 6907 and CoA 92081. The clone CoA 11323 was found to be significantly superior for cane, CCS yields and per cent juice sucrose when compared to three standards and other test clones. The clone CoA 11323 recorded less fibre content (12.81%) while CoC 10336 recorded high fibre (16.36%).

X. Salient findings.

The clone CoA 11323 was found to be significantly superior for cane , CCS yields and per cent juice sucrose with low content.

Table 6: Initial Varietal Trial (Early)
Statistically analysed data
Centre: Regional Agricultural Research Station, Anakapalle

S. No.	Clone	CCS (t/ha)	Cane yield (t/ha)	Brix % (10 m)	Sucrose % (10 m)	Purity % (10 m)	CCS % (10 m)	Pol % cane (10m)	Extraction % (10 m)	Fibre % (10 m)	NMC at 10 m ('000/ha)
1	**CoA 11321**	16.90	124.00	21.00	18.95	90.22	13.59	16.63	60.00	13.73	132.00
2	**CoA 11322**	15.10	121.00	19.37	17.43	89.95	12.49	14.98	57.33	15.57	122.00
3	**CoA 11323**	21.59	150.00	22.10	20.02	90.59	14.39	16.81	63.00	12.81	119.00
4	**CoC 10336**	14.43	108.00	20.89	18.67	89.37	13.36	15.92	52.00	16.36	137.33
5	**CoC 11336**	14.76	112.67	20.83	18.43	88.50	13.10	16.62	55.33	15.43	123.00
	Standards										
1	**Co 6907**	14.92	110.00	21.05	18.93	89.90	13.56	17.08	57.33	14.74	110.00
2	**CoC 01061**	15.61	121.33	20.99	18.10	86.26	12.87	16.09	50.00	16.12	143.33
3	**CoA 92081**	18.22	128.00	21.63	19.73	91.22	14.23	18.17	60.67	12.90	120.00
	Mean	**16.44**	**121.88**	**20.98**	**18.78**	**89.50**	**13.45**	**16.54**	**56.96**	**14.71**	**125.83**
	CD (0.5)	3.98	26.52	0.84	0.82	1.19	0.62	2.14	7.34	1.05	24.76
	CV (%)	9.26	8.33	1.53	1.68	0.51	1.77	4.97	4.93	2.75	7.53

S. No.	Clone	Stalk Length (cm)	Stalk Diameter (cm)	Single cane weight (kg)	Brix % (8 m)	Sucrose % (8 m)	Purity % (8 m)	CCS % (8 m)	No. of shoots ('000/ha) 240 days	No. of tillerss ('000/ha) 120 days	Germination % (30 days)
1	**CoA 11321**	267.67	2.86	1.143	18.91	16.65	88.06	11.81	137.00	153.00	62.00
2	**CoA 11322**	281.67	3.13	1.117	18.31	16.23	88.66	11.55	128.67	152.00	57.00
3	**CoA 11323**	279.33	3.23	1.150	19.19	17.17	89.48	12.27	131.33	141.67	61.33
4	**CoC 10336**	246.67	2.50	0.913	18.91	17.28	89.60	12.12	140.67	147.33	62.00
5	**CoC 11336**	281.67	2.50	0.997	18.94	16.81	88.74	11.96	128.67	135.00	59.67
	Standards										
1	**Co 6907**	266.00	2.62	1.023	19.40	17.01	87.70	12.05	119.67	119.00	60.33
2	**CoC 01061**	263.33	2.47	0.960	19.31	17.29	89.51	12.36	150.00	150.67	67.33
3	**CoA 92081**	264.33	3.17	1.143	20.73	18.59	89.69	13.30	127.67	132.00	71.67
	Mean	**268.83**	**2.81**	**1.060**	**19.21**	**17.13**	**88.93**	**12.18**	**132.96**	**141.33**	**62.67**
	CD (0.5)	34.24	0.56	0.13	0.90	1.00	2.03	0.66	22.62	26.08	9.00
	CV (%)	4.87	7.69	4.73	1.80	2.23	0.87	2.70	6.51	7.06	5.49

I.	**Project No.**	:	B II Zonal Varietal Trials P2 – 2013 /5 AHD / F30 / H10 / H20 / 0230
II.	**Project Title**		Initial varietal trial (Mid late)
III.	**Serial number of the year of Experimentation**	:	V
IV.	**Location**	:	Regional Agricultural Research Station, Anakapalle
V.	**Objective**	:	To screen and select high yielding and sucrose rich clones from clones pooled from different centres of EC Zone.
VI.	**Technical Programme on which the report is based**	:	Based on constraints identified in East Coast Zone and deliberation held in the Joint group / workshop in AICRP on Sugarcane.
VII.	**Discipline wise – technical report**	:	
	a. Date of planting	:	26.02.2013
	b. Varieties	:	Four+ Three stds CoA 11324, CoA 11325, CoA 11326, CoOr 11346 Standards: CoV 92102, Co 7219 Co 86249
	c. Fertilizer application	:	100 kg P_2O_5 + 120 kg K_2O / ha. 112 kg N in two splits i.e. at 45 DAP and 90 DAP
	d. Cultural practices	:	Hand weeding and hoeing : 8.4.2013 and 12.4.2013 Inter cultivation : 12.5.2013 Rectification of cross channels : 18.5.2013 Earthing up : 28.6.2013 Removal of flower weeds : 15.9.2013 and 17.9.2013 I Tier TT propping : 28.7.2013 and 30.7.2013 II Tier TT Propping : 21.9.2013 III Tier TT Propping : 12.10.2013
	e. Irrigations	:	Once in a week during formative phase and once in 18 days during maturity phase.
	f. Plant protection	:	Need based
	g. Date of harvest	:	10.2.2014
	h. Plot size	:	Gross : 6.0 m x 1.2 m x 6 R = 43.20 m^2 Net : 5.0 m x 1.2 m x 4 R = 24.00 m^2
	i. Layout	:	RBD
	j. Replications	:	Four
	k. Total experimental area		0.18 ha
	l. Name and designation of the participants	:	1. Dr. M.Charumathi, Senior Scientist (Plant Breeding) 2. Dr.K.Prasada Rao, Principal Scientist (Plant Breeding) 3. Dr.D.Adilakshmi, Senior Scientist (Plant Breeding)

m. Results recorded during the previous year :

Three clones were tested against three standards for their performance during 2012-2013. The clones differed significantly for all the characters studied. Number of millable Canes ranged from 94.00 thousands/ha (Co 86249) to 114.75 thousands/ha (CoA 10321). The clone CoA 10321 (114.75 thousands/ha) recorded maximum number of millable canes and was on par with standards CoV92102 (108.00 thousands/ha) and Co 7219(110.75 thousands/ha) but significantly superior over the other standard Co 86249 (94.00 thousands/ha) . Cane yield varied from 94.00t/ha (Co 86249) to 130.50 t/ha (CoA 10321). The clone CoA 10321 (130.50t/ha) recorded significantly higher cane yield when compared to three standards viz., CoV 92102 (108.00 t/ha), Co7219 (110.75 t/ha) and Co 86249 (94.00 t/ha). Per cent juice sucrose at harvest ranged from 17.45 (Coor 10346) to 21.50 (CoV 92102). The best standard CoV 92102 recorded significantly higher per cent juice sucrose when compared to test clones and other standards. However, the clone CoA 10321 (20.00) was on par with the better standard Co 7219 (19.50) but was significantly superior over the other standard Co86249 (17.50) for per cent juice sucrose. CCS yield varied from 11.15 (Coor10346) to 17.49t/ha (CoA10321). The clone CoA 10321 (17.49 t/ha) recorded significantly higher CCS yield when compared to three standards CoV 92102 (15.66 t/ha), Co7219 (15.28 t/ha) and Co86249 (11.85 t/ha). The clone CoOr 10346 (18.50) recorded higher fiber per cent where as the standard Co7219 (14.40) recorded lower fibre percentage at the time of harvest.

n. Results obtained during the year :

Four clones along with three standards , CoV 92102, Co 7219 and Co 86249 were tested during 2013-2014 in Initial varietal trial (Midlate). Significant variation was observed for most of the characters studied in the trial. Number of millable canes varied from 109.33 thousands/ha (Co 86249) to 132.00 thousands/ha (CoA 11326). The clone CoA 11326 (132.00 thousands/ha) was found to be significantly superior over the standards Co 86249 (109.33 thousands/ha) and Co 7219 (118.00 thousands/ha) but was on par with the best standard CoV 92102 (120.00 thousands/ha) . Cane yield varied from 114.00 t/ha (Co 86249) to 137.67 t/ha (CoA 11326). The clones CoA 11326 (137.37 t/ha) followed by CoA 11325 (130.00 t/ha) recorded significantly higher cane yield when compared to standards Co 86249 (114.00 t/ha) and CoV 92102 (122.33 t/ha) but was on par with the best standard Co 7219 (125.00 t/ha). Per cent juice sucrose ranged from 18.17 (Co 86249) to 21.15 (CoV 92102). The best standard CoV 92102 (21.15) was found to be significantly superior over the test clones and other standards. The clone CoA 11325 (19.74) was found to be superior with significantly higher sugar yield when compared to standards Co 7219 (17.58 t/ha) and Co 86249 (14.11t/ha) but was on par with the best standard CoV92102 (18.72 t/ha). Fibre per cent at harvest ranged from 14.40 (CoV 92102) to 16.90 (CoOr 11346). The clone CoOr 11346 (16.90) recorded maximum fibre per cent, while the standard CoV 92102 (14.40) recorded lower fibre per cent at harvest (Table 7).

IX. Technical programme of the year next to the reporting year:

Entries will be decided in Breeders meet of East Coast and Peninsular zones.

X. Technical summary of the individual reporting year:

The clones CoA 11326 and CoA 11325 recorded significantly higher number of millable canes, cane yield, CCS yield when compared to three standards CoV 92102, Co 7219 and Co 86249. For per cent juice sucrose the best standard CoV 92102 recorded significantly higher per cent juice sucrose when compared to test clones and other standards. The standard CoV 92102 recorded lower fibre per cent where as the clone CoOr 11346 recorded high fibre per cent.

XI. Salient findings.

The clones CoA 11326 and CoA 11325 recorded significantly higher number of millable canes, cane yield, CCS yields when compared to three standards Co 86249, Co 7219 and CoV 92102. The best standard CoV 92102 recorded higher per cent juice sucrose than the test clones.

Table 7: Initial Varietal Trial (Midlate)
Statistically analysed data
Centre: Regional Agricultural Research Station, Anakapalle.

S. No.	Clone	CCS (t/ha)	Cane yield (t/ha)	Brix % (12 m)	Sucrose % (12 m)	Purity % (12 m)	CCS % (12 m)	Pol % cane (12m)	Extraction % (12 m)	Fibre % (12 m)	NMC at 12 m ('000/ha)
1	**CoA 11324**	15.88	120.00	20.83	18.46	88.603	13.22	16.46	60.00	15.83	111.00
2	**CoA 11325**	18.44	130.00	22.11	19.74	89.310	14.19	17.79	54.00	14.91	128.00
3	**CoA 11326**	19.02	137.67	21.47	19.23	89.597	13.80	17.17	54.00	15.75	132.00
4	**CoOr 11346**	15.95	120.67	20.71	18.46	89.127	13.22	16.26	48.00	16.90	124.00
	Standards										
1	**CoV 92102**	18.72	122.33	23.00	21.15	91.957	15.27	19.16	60.00	14.40	120.00
2	**Co 7219**	17.58	125.00	21.67	19.60	90.463	14.06	17.54	56.67	15.50	118.00
3	**Co 86249**	14.11	114.00	20.87	18.17	87.697	12.37	16.09	52.67	16.43	109.33
	Mean	17.10	124.24	37.67	19.26	89.54	13.73	17.21	96.33	15.67	120.33
	CD (0.5)	**5.51**	**36.97**	**0.74**	**0.83**	**3.89**	**0.66**	**0.86**	**6.60**	**1.01**	**33.99**
	CV (%)	12.34	11.39	1.33	1.65	1.66	1.85	1.92	4.59	2.46	10.81

S. No.	Clone	Stalk Length (cm)	Stalk Diameter (cm)	Single cane weight (kg)	Brix % (10 m)	Sucrose % (10 m)	Purity % (10 m)	CCS % (10 m)	No. of shoots ('000/ha) 240 days	No. of tillerss ('000/ha) 120 days	Germination % (30 days)
1	**CoA 11324**	261.00	2.67	1.01	19.94	17.99	90.23	12.91	135.67	169.67	62.00
2	**CoA 11325**	266.67	2.79	1.01	20.16	18.02	89.37	12.87	149.00	174.33	63.00
3	**CoA 11326**	274.33	3.00	1.11	20.16	18.00	89.29	12.85	160.00	194.33	61.33
4	**CoOr 11346**	249.33	2.77	1.01	19.90	17.57	88.26	12.47	144.00	178.00	63.67
	Standards										
1	**CoV 92102**	274.67	2.97	1.18	21.60	19.57	90.62	14.07	145.33	187.67	60.00
2	**Co 7219**	268.33	2.83	1.10	20.53	18.37	89.50	13.13	146.33	183.33	64.33
3	**Co 86249**	249.33	2.58	1.01	19.72	17.80	90.30	12.78	121.67	163.00	60.00
	Mean	**263.38**	**2.80**	**1.06**	**20.29**	**18.19**	**89.65**	**13.01**	**143.14**	**178.62**	**62.05**
	CD (0.5)	18.58	0.23	0.05	1.70	0.79	2.86	0.65	34.71	28.30	7.73
	CV (%)	2.70	3.14	2.03	0.90	1.67	1.22	1.93	9.28	6.06	4.76

I.	**Project No.**	:	B II Zonal Varietal Trials P2 – 2013 /6 AHD / F30 / H10 / H20 / 0230
II.	**Project Title**		Advanced varietal trial (Mid late) I Plant crop
III.	**Serial number of the year of Experimentation**	:	VI
IV.	**Location**	:	Regional Agricultural Research Station, Anakapalle
V.	**Objective**	:	To screen and select high yielding and sucrose rich clones from clones poled from different centres of EC Zone.
VI.	**Technical Programme on which report is based**	:	Based on constraints identified in East Coast Zone and deliberation held in the Joint group / workshop in AICRP on Sugarcane.
VII.	**Discipline wise – technical report**	:	
	a. Date of planting	:	10.01.2013
	b. Varieties	:	Three + Three stds CoA 10321, CoC 10337 and CoOr 10346 Standards: CoV 92102, Co 7219 Co 86249
	c. Fertilizer application	:	100 kg P_2O_5 + 120 kg K_2O / ha. 112 kg N in two splits i.e. at 45 DAP and 90 DAP
	d. Cultural practices	:	Hand weeding and hoeing : 20.3.2013, 25.3.2013 Inter cultivation : 20.4.2013 Rectification of cross channels : 3.5.2013 Earthing up : 26.5.2013 Removal of flower weeds : 20.9.2013 I Tier TT propping : 20.6.2013 II Tier TT Propping : 12.8.2013 III Tier TT Propping : 20.10.2013 and 21.10.2013
	e. Irrigations	:	Once in a week during formative phase and once in 18 days during maturity phase.
	f. Plant protection	:	Need based
	g. Date of harvest	:	8.1.2014
	h. Plot size	:	Gross : 6.0 m x 1.2 m x 6 R = 43.20 m^2 Net : 5.0 m x 1.2 m x 4 R = 24.00 m^2
	i. Layout	:	RBD
	j. Replications	:	Four
	k. Total experimental area		0.18 ha
	l. Name and designation of the participants	:	1. Dr. M.Charumathi, Senior Scientist (Plant Breeding) 2. Dr.K.Prasada Rao, Principal Scientist (Plant Breeding) 3. Dr.D.Adilakshmi, Senior Scientist (Plant Breeding)

m. Results recorded during the previous year :

Three clones were tested against three standards for their performance during 2011-2012. The clones differed significantly for all the characters studied. Number of millable canes ranged from 89.00 (Co 86249) to 116.50 thousands/ha (CoC 08339). The clones CoC 08339 (116.50 thousands/ha followed by Co 06031 (112.75 thousands /ha) recorded maximum number of millable canes but was on par with the standard CoV 92102 (110.75 thousands/ha) and Co 7219 (100.00 thousands/ha) and significantly superior over other standard Co 86249 (89.00 thousands/ha). Cane yield varied from 90.00 t/ha (CoC09339) to 124.50 t/ha (Co 06031). The clone Co 06031 recorded higher cane yield (124.50 t/ha) followed by CoC 08339 (124.00 t/ha) and found to be significantly superior over best standard Co7219 (112.00t/ha) , better standard CoV 92102 (107.00t/ha) and other standard Co 86249 (92.25t/ha).Per cent juice sucrose at harvest ranged from 17.50 (Co 86249) to 19.54 (CoV 92102). The best standard CoV 92102 (19.54) recorded maximum per cent juice sucrose compared to test clones. However, the clone Co 06031 (19.00) was found to be on par with the best standard CoV 92102 (19.54) for per cent juice sucrose. CCS yield varied from 10.94 (CoC 09339) to 16.01 t/ha (Co 06031). The clone Co06031 (16.01t/ha) recorded significantly higher CCS yield when compared to test clones and other standards. However the clone CoC 08339 (15.01) was found to be on par with best standard Co7219(13.27 t/ha) for CCS yield.

n. Results obtained during the year :

Three clones *viz.,* CoA 10321, CoC 10337 and CoOr 10346 along with three standards Co 7219, CoV 92102 and Co 86249 were tested during 2013-14. The clones differed significantly for all characters studied. Number of millable canes ranged from 94.00 thousands/ha (Co 86249) to 118.75 thousands/ha (CoA 10321). The clone CoA 10322 (118.75 thousands/ha) was on par with the best standard Co 7219 (114.00 thousands/ha) and better standard CoV 92102 (110.50 thousands/ha) with respect to millable stalk population. Cane yield ranged from 96.25 t/ha (Co 86249) to 132.50 t/ha (CoA10321). The clone CoA 10321 (132.50 t/ha) was found to be significantly superior over two standards, Co 7219 (118.00 t/ha), CoV 92102 (116.00 t/ha) and Co 86249 (96.25 t/ha). Per cent juice sucrose at harvest ranged from 17.83 (CoOr 10346) to 21.23 (CoV 92102). The best standard CoV 92102 (21.23) was found to be significantly superior over the test clones and other standards. However, the clone CoA 10321 (19.07) was found to be significantly superior over the standard Co 86249 (18.51) and on par with another standard Co 7219 (19.61) for per cent juice sucrose at harvest. CCS yield varied from 12.71 (Co 86249) to 18.18 t/ha (CoA 10321). The clone CoA 10321 (18.18 t/ha) recorded significantly higher CCS yield over the standards Co 86249 (12.71 t/ha) and Co 7219 (16.64 t/ha) but on par with the best standard CoV 92102 (17.78 t/ha) for CCS yield the standard CoV 92102 recorded lower fibre per cent (13.42) where as CoOr 10346 (17.18) recorded higher fibre per cent at harvest (Table 8).

XII. Technical programme of the year next to the reporting year:

Entries will be decided in Breeders meet of East Coast and Peninsular zones.

XIII. Technical summary of the individual reporting year:

The clone CoA 10321 recorded significantly higher number of millable canes, cane yield and CCS yields and was found to be significantly superior over three standards i.e., Co 86249, Co 7219 and CoV 92102. The best standard CoV 92102 recorded significantly higher per cent juice sucrose and found to be superior over other standards and test clones. However, the clone CoA 10321 was significantly superior over another standard Co 86249 and on par with the standard Co 7219 for per cent juice sucrose.

XIV. Salient findings.

The clone CoA 10321 was fount to be superior for number of millable canes and CCS yield over other test clones and standards. The best standard CoV 92102 recorded higher per cent juice sucrose at harvest. However, the clone CoA 10321 was significantly superior over another standard Co 86249 and on par with the standard Co 7219 for per cent juice sucrose.

Table 8: Advanced Varietal Trial (Midlate) I Plant
Statistically analysed data
Centre: Regional Agricultural Research Station, Anakapalle.

S. No.	Clone	CCS (t/ha)	Cane yield (t/ha)	Brix % (12 m)	Sucrose % (12 m)	Purity % (12 m)	CCS % (12 m)	Pol % cane (12m)	Extraction % (12 m)	Fibre % (12 m)	NMC at 12 m ('000/ha)
1	**CoA 10321**	18.18	132.50	21.05	19.07	90.62	13.71	17.11	61.75	15.32	118.75
2	**CoC 10337**	15.44	114.00	20.85	18.86	90.46	13.55	16.61	49.75	16.91	111.75
3	**CoOr 10346**	12.74	100.00	19.90	17.83	89.57	12.75	15.66	46.25	17.18	104.50
	Standards										
1	**CoV 92102**	17.78	116.00	23.25	21.23	91.34	15.32	19.44	60.50	13.42	110.50
2	**Co 7219**	16.64	118.00	22.39	19.61	87.58	13.87	17.76	59.00	14.41	114.00
3	**Co 86249**	12.71	96.25	20.70	18.51	89.40	13.22	16.45	56.25	16.10	94.00
	Mean	15.58	112.79	21.36	19.18	89.83	13.74	17.17	55.58	15.55	108.92
	S.Em±										
	CD (0.5)	2.95	23.01	0.63	0.77	2.85	0.71	0.66	5.71	0.80	22.06
	CV (%)	7.25	7.80	1.13	1.54	1.21	1.99	1.48	3.93	1.98	7.75

S. No.	Clone	Stalk Length (cm)	Stalk Diameter (cm)	Single cane weight (kg)	Brix % (10 m)	Sucrose % (10 m)	Purity % (10 m)	CCS % (10 m)	No. of shoots ('000/ha) 240 days	No. of tillerss ('000/ha) 120 days	Germination % (30 days)
1	**CoA 10321**	276.00	2.76	1.06	20.37	18.17	89.21	12.97	146.75	185.25	59.50
2	**CoC 10337**	264.75	2.26	0.99	19.77	17.61	89.24	12.56	136.50	178.50	57.75
3	**CoOr 10346**	272.25	2.33	1.01	19.08	17.05	89.36	12.18	142.25	180.50	56.00
	Standards										
1	**CoV 92102**	275.50	2.73	1.07	21.75	19.63	90.22	14.08	141.00	190.50	61.00
2	**Co 7219**	259.00	2.80	1.02	21.40	19.24	89.89	13.78	139.25	180.25	56.50
3	**Co 86249**	248.00	2.56	1.00	19.25	17.13	88.61	12.21	131.00	173.50	58.25
	Mean	265.92	2.57	1.03	20.27	18.14	89.42	12.96	139.46	181.42	58.17
	S.Em±										
	CD (0.5)	18.23	0.25	0.05	0.96	0.83	1.68	0.62	20.67	26.42	6.48
	CV (%)	2.62	3.76	2.21	1.81	1.76	0.72	1.83	5.67	.57	4.26

ANNEXURE – I

Progress of fluff supply programme from 2000-01 to 2013-14 at RARS; Anakapalle

Year	Quantity of fluff received(g)	No.of crosses/GCs/PCs studied			No. of seedlings			No. of genotypes selected/evaluated in			C_3 PYT	No. of clones promoted to yield trials
		Crosses	GCs	PCs	Transplanted	Survived	% Survival	Seedling nursery(C_0)	Settling nursery(C_1)	Selection nursery (C_2)		
2000-01	1,136.98	23	12	-	3,332	2,735	82.08	103	86/318	16/58	10/12	Early-5 Midlate-5
2001-02	2,804.70	47	25	7	13,711	10,226	74.58	252	20/101	20/86	8/16	Early-4 Midlate-4
2002-03	2,719.50	34	24	8	22,303	11,245	50.42	315	38/252	11/20	9/20	Early-6 Midlate-3
2003-04	1,329.00	23	21	11	11,869	7,590	63.95	131	62/315	16/38	6/11	Early-3 Midlate-3
2004-05	1698.90	24	42	5	12389	9792	79.04	175	30/131	23/62	9/16	Early-6 Midlate-3
2005-06	1136.65	29	41	-	31235	12152	38.91	317	44/175	11/30	11/23	Early-6 Midlate-5
2006-07	1177.99	39	29	-	15424	11560	74.95	220	40/317	24/44	9/11	Early-5 Midlate-4
2007-08	1313.40	46	19	-	17311	13692	79.61	520	52/220	17/40	14/24	Early-5 Midlate-9
2008-09	1744.39	49	37	10	15005	9193	61.27	472	114/520	18/52	7/17	Early-7
2009-10	1102.70	42	19	4	9588	5260	54.86	519	66/472	23/114	7/18	Early-4 Midlate-3
2010-11	1748.77	40	35	12	14337	4537	31.65	321	100/519	21/66	15/23	Early-9 Midlate-6
2011-12	1941.22	54	38	12	16228	11620	71.60	357	91/321	41/100	12/21	Early-6 Midlate-6
2012-13	1142.99	30	23	13	14213	6250	43.97	369	104/357	25/91	12/41	Early-6 Midlate-6
2013	2144.50	28	23	7	9403	6888	73.25	355	93/369	22/104	14/25	Early-7 Midlate-7

ANNEXURE – II

Meterogical Data during Crop Period (2013 – 14)

S.No	Years	Temp (0^0C)		R.H. Per cent		Rain fall m.m	No. of Rainy days	Sun shine hours	Evaporation	Insect Pest/disease incidence
		Max	Min	Max	Min					
1	Januray,2013	30.1	14.9	95	56	019.8	1	06.0	03.1	Insect pest like Early shoot borer, Internodal borer and scale insect pest diseases like yellow leaf disease were recorded during the crop season.
2	February,2013	31.7	15.0	91	44	005.0	1	06.0	04.0	
3	March,2013	35.0	17.5	88	42	005.0	1	08.1	05.5	
4	April,2013	35.1	21.5	89	55	038.0	4	07.6	05.5	
5	May,2013	37.6	25.1	86	55	005.4	1	06.9	06.2	
6	June,2013	34.8	23.8	86	59	043.2	5	04.6	05.0	
7	July,2013	33.1	23.2	88	66	029.6	4	02.7	04.5	
8	August,2013	32.5	22.7	90	68	155.2	9	04.8	04.0	
9	September,2013	32.9	21.8	92	66	149.2	10	05.2	02.9	
10	October,2013	30.4	21.3	92	72	573.6	10	04.2	02.8	
11	November,2013	30.0	17.4	91	65	088.4	2	06.6	02.9	
12	December,2013	29.5	14.6	90	54	000.0	0	06.8	03.2	
13	January,2014	29.5	14.6	94	52	000.0	0	06.1	02.9	
14	February,2014	31.1	14.1	94	44	000.0	0	07.6	03.9	
15	March,2014	34.6	18.2	88	41	000.0	0	07.3	05.1	