

ANNUAL REPORT FOR THE YEAR 2012-13

AICRP on Sugarcane

AGRONOMY

- I. V. Project No : AS 42
VI. Project Title : Agronomic evaluation of new promising sugarcane genotypes (Mid late)-Ratoon under irrigated conditions.
- VII. Serial number of the year of experimentation : III year (I & II year plant crops and III year Ratoon)
- VIII. Location : Regional Agricultural Research Station, Anakapalle
- IX. Objectives : To work out optimum nutrient requirement of sugarcane varieties from advanced varietal trial.
- X. Technical programme on which the report is based : Project Coordinator, AICRP on Sugarcane, Agronomy / Soil Science sub-committee. Technical Programme of work for the year 2012-13 finalized during biennial workshop of AICRP (Sugarcane) held at TNAU Coimbatore 19th and 20th October, 2012.
- a. Treatments :
Varieties : Three
V1: 96 A 3
V2: 99 A 5
V3: Co 7219
Nitrogen levels : Three
F1: 75% of the recommended dose of N (84Kg/ha)
F2: 100% of the recommended dose of N(112 Kg/ha)
F3: 125% of the recommended dose of N(140 Kg/ha)
- b. Design : Factorial RBD
- c. Replications : Three
- d. Plot size : 8.0 m X 6.0 m
- e. Manuring : N as per the treatments applied in two equal splits at ratooning and 45 days after ratooning. P₂O₅ & K₂O as per the recommended dose is to be applied as basal at the time of ratooning.
- f. Irrigations : Irrigations were given once in 6 days during formative phase till the onset of monsoon rains. Once in 21 days during maturity phase from November till harvest.
- g. Date of harvesting : 22.12.2012
- h. Designation and name of the Participants : Dr.T.Chitkala Devi, Professor(Agronomy)
Dr. V. Gouri, Scientist (Agronomy)
Dr. MBGS. Kumari, Scientist (Agronomy)
Dr. K. Prasada Rao, Principal Scientist,(Sugarcane)
- i. Year of trial : III year (First year ratoon)
- j. Results recorded previously : During 2011-12 season, Cane yield of new promising

mid late sugarcane genotypes varied significantly due to different levels of nitrogen. Application of nitrogen at 125% recommended dose registered significantly higher cane yield of 86.4 t/ha than 100% recommended nitrogen (80.2 t/ha). Both the new mid late genotypes viz., 99 A 5 (84.0 t /ha) and 96 A 3 (82.7 t / ha) registered more or less similar cane yield. The standard check variety Co 7219 registered lower cane yield of 80.1 t/ha.

k. Data recorded during the year:

Number of millable canes/ha:

Significant differences in number of millable canes at harvest were observed due to different sugarcane genotypes and levels of nitrogen nutrient (Table-1). Application of nitrogen at 100% recommended dose registered higher number of millable canes (75,501) than 75% recommended nitrogen (73,569). At 125% recommended N dose the increase in NMC was not significant. Among the new genotypes 99A5 had higher number of millable canes (81,542) than 96A3 (74,424) and check variety Co 7219 (72,975).

Juice sucrose (%):

Cane juices were analyzed for sucrose content at harvest (Table – 1). Percent juice sucrose did not vary with sugarcane genotypes. But, application of 75% RDN registered significantly higher per cent juice sucrose (16.12) but found on par with 125% RDN (15.25). Interaction between genotypes and nutrient level found to significant and 96A3 genotype registered significantly higher sucrose per cent(17.98) at 75% RDN (Table-2).

Commercial cane sugar(%):

Commercial cane sugar percent was calculated treatment wise. Application of 75% RDN (11.92) registered significantly higher per cent commercial cane sugar as compared to 100% RDN (10.74) and 125% RDN (11.18). Commercial cane sugar percent did not vary with sugarcane genotypes. Interaction between genotypes and nutrient level found to significant and 96A3 genotype registered significantly higher Commercial cane sugar (13.1) at 75% RDN (Table-3).

Cane yield (t/ha):

Cane yield was recorded and presented in Table 1. Cane yield of new mid late sugarcane genotypes under ratoon varied significantly due to different N levels. Application of nitrogen at 100% recommended dose registered significantly higher cane yield of 80.8 t/ha than lower level of 75% recommended N (70.2 t/ha). Further increase in level of N to 125% (85.1 t/ha) did not found to improve the cane yield to a significant level. Among the mid late genotypes under test, 99A5 proved superior (87.1 t/ha) than 96A3 (80.2 t/ha) and check variety Co 7219 (74.2 t/ha).

Sugar yield (t/ha):

Sugar yield was computed treatment wise and data are presented in table – 1. Sugar yields followed the same trend as that of cane yield.

Summary:

Performance of new promising mid late sugarcane genotypes viz., 96A3 and 99A5 along with check Co 7219 was studied under graded levels of Nitrogen nutrient under ratoon irrigated conditions at Regional Agricultural Research Station, Anakapalle during 2012-13 season. The results showed that application of 'N' at 100% recommended dose registered significantly higher cane yield of 80.8 t/ha than lower level of 75% recommended N (70.2 t/ha). Further increase in the level of N to 125% (85.1 t/ha) did not found to improved the cane yield to a significant level. Among the mid late genotypes under test 99 A 5 proved superior (87.1 t/ha) than 96 A 3 (80.2 t/ha) and check variety Co 7219 (74.2 t/ha).

Pooled data:

Three years (two plant crops and one ratoon) pooled data mean of number of millable canes (NMC), cane yield and sugar yield was calculated and presented in table-4. Among different sugarcane genotypes (mid late group) 99A5 recorded higher number of millable canes (75,960), cane yield (84.1 t/ha) and sugar yield (10.20 t/ha). Three tested genotypes performed well and registered higher number of millable canes (76,782), cane yield (85.0 t/ha) and sugar yield (10.5 t/ha) at 125% (140 Kg N/ha) recommended dose of nitrogen dose.

Table -1: Yield attributes, yield and quality of promising sugarcane genotypes (mid late-ratoon) as influenced by different levels of nitrogen under irrigated conditions during 2012-13.

Treatment	Number of millable canes /ha	Cane yield (t/ha)	Sucrose (%)	CCS (t/ha)	Sugar yield (t/ha)
Varieties					
96A3	74,424	80.20	15.50	11.21	9.0
99A5	81,542	87.10	15.20	11.13	9.7
Co 7219	72,975	74.20	15.00	11.07	8.2
SEm ±	951	2.09	-	-	-
C.D (0.05)	3733	6.14	NS	NS	-
N levels(Rec. dose of N-112 Kg/ha)					
N1- 75% RDN (84 Kg /ha)	73,569	70.20	16.12	11.92	8.5
N2-100% RDN (112 Kg N/ha)	75,501	80.80	14.80	10.74	8.7
N3-125% RDN (140 Kg /ha)	76,164	85.10	15.25	11.18	9.5
SEm ±	1089	2.42	0.30	0.284	-
C.D (0.05)	3234	7.09	1.02	0.83	-
Interaction (VXN)	NS	NS	1.78	1.45	-

Date of Ratooning-23.1.2012

Date of harvesting-22.12.2012

Table -2: % Sucrose of promising sugarcane genotypes (Mid late - ratoon) at different nitrogen levels.

Treatment	75% RDN	100% RDN	125% RDN
96 A 3	17.98	14.75	15.56
99 A 5	15.68	15.43	15.23
Co 7219	14.70	14.23	14.98
Interaction (VXN)	SEm ±	C.D (0.05)	
	0.30	1.02	

Table -3: CCS % of promising sugarcane genotypes (Mid late - ratoon) at different nitrogen levels.

Treatment	75% RDN	100% RDN	125% RDN
96 A 3	13.1	10.6	11.3
99 A 5	11.2	11.3	11.1
Co 7219	11.4	10.3	11.1
Interaction (VXN)	SEm ±	C.D (0.05)	
	0.284	0.83	

Table: 4 Pooled data of number of millable canes, cane yield and sugar yield of new promising sugarcane genotypes (Mid – late group) as influenced by different levels of nitrogen under irrigated conditions (2010-11 To 2012-13).

Treatments	NMC / ha 2010-11	NMC / ha 2011-12	NMC / ha 2012-13	Mean	Cane yield(t/ha) 2010-11	Cane yield(t/ha) 2011-12	Cane yield(t/ha) 2012-13	Mean	Sugar yield (t/ha) 2010-11	Sugar yield (t/ha) 2011-12	Sugar yield (t/ha) 2012-13	Mean
Varieties												
V1:96A3	70058	73158	74424	72547	80.8	82.7	80.20	81.20	9.7	11.2	9.0	10.00
V2:99A5	71079	75261	81,542	75,960	81.3	84.0	87.10	84.10	9.8	11.1	9.7	10.20
V3:Co 7219	69659	72659	72975	71764	78.1	80.1	74.20	77.50	9.5	10.6	8.2	9.43
S.Em±	1592	1386	951	1310	1.9	2.2	2.09	2.06		-	-	
C.D. (P = 0.05)	NS	NS	3733		NS	NS	6.14			-	-	
Nitrogen levels												
N1:75% of RDN (84 kg N/ha)	65397	69256	73569	69407	73.3	74.7	70.20	72.7	8.8	10.0	8.4	9.1
N2:100% of RDN (112 kg N/ha)	69678	73358	75501	72846	78.2	80.2	80.80	79.7	9.5	10.8	8.7	9.7
N3:125% of RDN (140 kg N/ha)	75719	78464	76164	76782	83.6	86.4	85.10	85.0	10.2	11.7	9.5	10.5
S.Em±	1592	1386	1089	1356	1.9	2.2	2.42	2.17		-	-	
C.D. (P = 0.05)	4602	3881	3234	3906	4.8	5.5	7.09	5.80		-	-	
Interaction(VXN)	NS	NS	NS		NS	NS	NS			-	-	

- I. V. Project No : AS 42
 VI. Project Title : Agronomic evaluation of new promising sugarcane genotypes (Early group) under irrigated conditions.
- VII. Serial number of the year of experimentation : I year
- VIII. Location : Regional Agricultural Research Station, Anakapalle
- IX. Objectives : To work out optimum nutrient requirement of sugarcane varieties from advanced varietal trial.
- X. Technical programme on which the report is based : Project Coordinator, AICRP on Sugarcane, Agronomy / Soil Science sub-committee. Technical Programme of work for the year 2012-13 finalized during biennial workshop of AICRP (Sugarcane) held at TNAU Coimbatore 19th and 20th October, 2012.
- a. Treatments :
 Varieties : Three
 V1: 2004 A 55
 V2: 2001 A 63
 V3: 93 A 145
 Nitrogen levels : Three
 F1: 75% of the recommended dose of N(84 kg/ha)
 F2: 100% of the recommended dose of N(112kg/ha)
 F3: 125% of the recommended dose of N(140kg/ha)
- b. Design : Factorial RBD
- c. Replications : Three
- d. Plot size : 9.0 m X 4.8 m
- e. Manuring : As per the treatments
Recommended dose:
 112kg N + 100kg P₂O₅ + 120kg K₂O / ha.
 Entire dose of phosphorous and potassium was applied as basal in furrows. Nitrogen was applied in two equal split doses at 45 and 90 days after planting.
- f. Irrigations : Irrigations were given once in 6 days during formative phase till the onset of monsoon rains. Once in 21 days during maturity phase from November till harvest.
- g. Date of harvesting : 24.12.2012
- h. Designation and name of the Participants : Dr. V. Gouri, Scientist (Agronomy)
 Dr. T. Chitkala Devi, Professor (Agronomy)
 Dr. MBGS. Kumari, Scientist (Agronomy)
 Dr. K. Prasada Rao, Principal Scientist, (Sugarcane)
- i. Year of trial : I year
- j. Results recorded previously : New trial

k. Data recorded during the year:**Germination percent:**

Germination per cent was recorded at 35th days after planting and presented in Table 5. Not much variation was observed in germination per cent both with sugarcane genotypes and nitrogen doses.

Number of millable canes/ha:

Number of millable canes varied significantly due to different nitrogen doses (Table 5). Application of nitrogen fertilizer at 125% recommended dose to early sugarcane genotypes significantly increased the number of millable canes (81,573) as compared to 75% recommended dose of nitrogen fertilizer (75,442) and 100% recommended dose (78,535). Among the genotypes 2001 A 63 recorded significantly higher number of millable canes (82,545) than 2004 A 55 (79,373) and check variety 93A145 (78,963). The interaction effect was found to be non significant.

Juice Sucrose (%):

Significant difference in juice sucrose (%) was not observed with different doses nitrogen. But, among three early genotypes 2001 A 63 recorded significantly higher percent juice sucrose (15.53) as compared 2004 A 55 (14.85). Interaction between genotypes and nutrient level found to significant and 2004A55 early genotype registered significantly higher sucrose per cent (Table-6) at 100% RDN(16.3).

Commercial cane sugar per cent:

Commercial cane sugar percent was calculated treatment wise. Application of 125% RDN (11.2) registered significantly higher per cent commercial cane sugar as compared to 75% RDN (10.9) . Commercial cane sugar percent did not vary with sugarcane genotypes. Interaction between genotypes and nutrient level found to significant and 2004A55 genotype registered significantly higher Commercial cane sugar (11.9) at 100% RDN (Table-7).

Cane yield (t/ha):

Cane yield was recorded at harvest and the data are presented in table-5. Cane yield of early maturing sugarcane genotypes differed significantly due to different levels of nitrogen. Application of 100% recommended dose of N fertilizer registered significantly higher cane yield of 87.8 t/ha as compared to 75% RDN (78.5 t/ha). At 125% level of fertilizer dose the yield increase (88.9) was not significant. New early promising genotypes 2001 A 63 (88.0 t/ha) and 2004 A 55 (87.3 t/ha) registered significantly higher cane yield as compared to check variety 93 A 145. The interaction effects were found non-significant.

Sugar yield:

Sugar yield was computed treatment wise and data are presented in Table-5. Sugar yields followed the same trend as that of cane yield.

Summary:

Performance of new promising early sugarcane genotypes viz., 2004 A 55 and 2001 A 63 along with standard check 93 A 145 was studied under different levels of nitrogen under irrigated conditions at Regional Agricultural Research Station, Anakapalle during 2012-13 season. The results showed that application of nitrogen at 125% (88.9 t/ha) and 100% (87.8 t/ha) registered significantly higher cane yield than 75% recommended dose of nitrogen. The cane yield of both new early sugarcane genotypes 2004A55(87.3t/ha) and 2001A63 (88.0 t/ha) are on par and significantly higher as compared to check variety 93A145 (82.9 t/ha).

Table -5: Yield attributes, yield and quality of promising sugarcane genotypes (Early group-plant crop) as influenced by different levels of nitrogen under irrigated conditions.

Treatment	Germination per cent	NMC	LMC (cm)	Cane yield (t/ha)	Juice Sucrose (%)	CCS (t/ha)	Sugar yield (t/ha)
Varieties							
2004A55	68.3	79,373	277.4	87.3	14.85	10.9	9.53
2001A63	67.6	82,545	277.7	88.0	15.53	11.2	9.87
93A145	66.4	78,963	279.4	82.9	16.06	11.5	9.58
SEm ±	-	999	-	1.09	0.33	-	-
C.D (0.05)	-	2930	NS	3.22	0.95	NS	-
N levels(Rec. dose of N-112 Kg/ha)							
N1- 75% RDN (84 Kg N/ha)	66.3	75,442	271.7	78.5	15.42	10.9	8.57
N2-100% RDN (112 Kg N/ha)	67.8	78,535	277.7	87.8	15.53	11.1	9.79
N3-125% RDN (140 Kg N/ha)	67.9	81,573	281.3	88.9	15.14	11.2	9.94
SEm ±	-	1153	2.38	1.27		0.15	-
C.D (0.05)	-	3384	6.98	3.72	NS	0.46	-
Interaction (VxN)							
C.D (0.05)	-	NS	NS	NS	1.92	0.88	-

Date of planting-14.2.2012

Date of harvesting-24.12.2012

Table -6: % Sucrose of promising sugarcane genotypes (Early group-plant crop) at different nitrogen levels.

Treatment	75% RDN	100% RDN	125% RDN
2004 A 55	14.8	16.3	14.2
2001 A 63	15.8	14.8	15.7
93 A 145	15.7	15.4	15.5
Interaction (VXN)	SEm ±	C.D (0.05)	
	0.65	1.92	

Table -7: CCS % of promising sugarcane genotypes (Early group-plant crop) at different nitrogen levels.

Treatment	75% RDN	100% RDN	125% RDN
2004 A 55	10.6	11.9	10.9
2001 A 63	10.1	10.7	11.3
93 A 145	11.0	10.8	11.3
Interaction (VXN)	SEm ±	C.D (0.05)	
	0.27	0.88	

- III. V. Project No : AS 64
 VI. Project Title : Response of sugarcane crop to different plant nutrients in varied agro ecological situations.
 VII. Serial number of the year of experimentation : II year
 VIII. Location : Regional Agricultural Research Station, Anakapalle
 IX. Objectives : To study the differential response of sugarcane crop to different nutrients.
 X. Technical programme on which the report is based : Project Coordinator, AICRP on Sugarcane, Agronomy / Soil Science sub-committee. Technical Programme of work for the year 2012-13 finalized during Biennial workshop of AICRP (Sugarcane) held at TNAU Coimbatore 19th and 20th October, 2012.
- a. Treatments :13
 T1: Control (No Fertilizer)
 T2: N
 T3: NP
 T4: NPK
 T5: NPK +S
 T6: NPK + Zn
 T7: NPK + Fe
 T8: NPK +Mn
 T9: NPK + S + Zn
 T10: NPK + S + Zn +Fe
 T11: NPK + S + Zn +Fe + Mn
 T12: Soil test based fertilizer application
 T13: FYM @ 20 t/ha
- S:60 kg/ha- elemental sulphur
 Zn: 50 kg ZnSO₄/ha
 Fe: 1% foliar spray thrice at weekly interval during vegetative stage.
 Mn: 10 kg MnSO₄/ha
 NPK as per recommendation (112kg N + 100kg P₂O₅ + 120kg K₂O / ha)
- b. Design : RBD
 c. Replications : Three
 d. Plot size : 7.0X 8.0 m
 e. Manuring : As per treatments entire dose of phosphorous, potassium, was applied as basal in furrows. Nitrogen was applied in two equal split doses at 45 and 90 days after planting.
 f. Irrigations : Once in 6 days during formative phase lies in the onset of monsoon rains and once in 21 days during maturity phase from November till harvest.
 g. Date of harvesting : 28.1.2013
 h. Designation and name of the Participants : Dr. V. Gouri, Scientist (Agronomy)
 Dr.T.Chitkala Devi, Professor(Agronomy)
 Dr.M.B.G.S. Kumari, Scientist (Agronomy)
 Dr. K. Prasada Rao, Principal Scientist (Sugarcane)
 i. Year of trial : II year
 j. Results recorded previously : New trial

k. Data recorded during the year:

Initial soil analysis was done. The soil is low in organic carbon (0.45%), low in available nitrogen (205 kg N /ha), medium in available phosphorus (39.7 kg/ha), high in available potassium (322 kg / K₂O /ha), low in Sulphur (8.1 ppm), low in Zinc (0.45 ppm), low in Iron (2.6 ppm) and sufficient in Manganese (2.5 ppm).

Germination Percent:

Germination percent was recorded at 35th day after planting and presented in table-8. Application of nitrogen, phosphorus and potassium along with other micronutrients Zn, S, Mn and Fe or soil test based fertilizer application registered higher per cent germination (ranged from 63.6% to 66.1%) where as only nitrogen applied plots registered 62.1 %. Control plot (no fertilizer) registered lesser germination per cent of 61.7%.

Number of millable canes/ha:

Number of millable canes were recorded at harvest and data are presented in table -8. Application of N P K + S + Zn + Fe + Mn (80,769) or soil test based fertilizer application (79,807) or NPK + S + Zn + Fe (78,525) found to register higher number of millable canes than other nutrient treatments. No fertilizer applied plot (57,371) followed by application of FYM @ 20 t/ha recorded significantly lower number of millable canes (59,294).

Cane yield (t/ha):

Cane yield was recorded at harvest and the data are presented in table-8. Application of macro nutrients along with Fe, Zn and also Mn and S registered significantly higher cane yield (83.6 t/ha) as compared to application N alone (69.0 t/ha) or N and P (74.4 t/ha) or N, P and K (76.3 t/ha) or N, P, K and S (78.2 t/ha) or N, P, K and Zn (78.2 t/ha) or application of FYM @ 20 t/ha (64.0 t/ha), but found on par with application of nutrients based on soil test (82.9 t/ha) or N, P, K + S + Zn + Fe (81.4 t/ha) or NPK + Fe (81.1 t/ha) or NPK + Zn (80.5 t/ha) or NPK + Mn (79.8 t/ha). No fertilizer applied plot registered significantly lowest cane yield of 51.3 t/ha.

Juice Sucrose (%):

Cane juices were analysed for sucrose content at harvest (Table – 8). Juice sucrose values vary significantly due to different priming cane node treatments. Significantly higher percent juice sucrose was recorded in application of macro nutrients (N, P, K) along with S treatment (18.3).

Commercial cane sugar:

CCS % did not vary significantly due to different nutrient treatments. However, the highest CCS% was recorded in soil test based fertilizer application plot (14.2).

Sugar yield (t/ha):

Sugar yield was calculated based on CCS% and cane yield. Sugar yield ranged from 8.83 to 11.8 t/ha in different nutrient applied plots. No fertilizer applied plot registered the lowest sugar yield of 6.5 t/ha.

Summary:

Effect of different macro and micro nutrients along with sulphur was studied during 2012-13 season at RARS, Anakapalle. The results of the study indicated that application of macro nutrients (N, P, K) along with Fe, Zn and also Mn and S registered significantly higher cane yield of 83.6 t/ha as compared to application N alone (69.0 t/ha) or N and P (74.4 t/ha) or N, P and K (76.3 t/ha) or N, P, K and S (78.2 t/ha) or N, P, K and Zn (78.2 t/ha) or application of FYM @ 20 t/ha (64.0 t/ha), but found on par with application of nutrients based on soil test (82.9 t/ha) or N, P, K + S + Zn + Fe (81.4 t/ha) or NPK + Fe (81.1 t/ha) or NPK + Zn (80.5 t/ha) or NPK + Mn (79.8 t/ha). No fertilizer applied plot registered significantly lowest cane yield of 51.3 t/ha.

Table -8: Yield attributes, yield and quality of sugarcane as influenced by different nutrients.

Treatments	Germination Per cent	NMC /ha	LMC(cm)	Cane yield (t/ha)	Juice sucrose(%)	CCS (%)	Sugar yield (t/ha)
T1: Control (No Fertilizer)	61.7	57,371	229.0	51.3	17.6	12.7	6.50
T2: N	62.1	68,910	237.9	69.0	17.6	12.8	8.83
T3: NP	63.1	70,512	239.6	74.4	16.8	12.0	8.93
T4: NPK	63.6	72,115	245.5	76.3	17.9	13.2	10.10
T5: NPK +S	64.0	74,358	247.2	78.2	18.3	13.3	10.40
T6: NPK + Zn	64.5	76,282	248.7	80.5	17.4	12.7	10.22
T7: NPK + Fe	65.1	77,564	251.7	81.1	17.3	12.4	10.10
T8: NPK +Mn	64.8	75,641	259.7	79.8	16.6	12.0	9.70
T9: NPK + S + Zn	65.0	75,961	262.5	80.1	16.6	12.0	9.61
T10: NPK + S + Zn +Fe	64.6	78,525	262.7	81.4	17.2	12.5	10.20
T11: NPK + S + Zn +Fe + Mn	65.0	80,769	265.5	83.6	17.3	12.5	10.50
*T12: Soil test based fertilizer application	66.1	79,807	264.8	82.9	17.6	14.2	11.8
T13: FYM @ 20 t/ha	63.0	59,294	237.5	64.0	17.6	13.3	8.5
S.Em±	-	780.6	-	1.53	0.24	1.18	-
C.D. (P=0.05)	-	2277	NS	4.46	0.71	NS	-

*T12- FYM- 20 t/ha: N-145 Kg /ha: P₂O₅-100 Kg/ha: K₂O-84 Kg/ha :elemental sulphur- 60 Kg/ha: ZnSO₄- 50 Kg/ha :FeSO₄-1% spray thrice at weekly interval during vegetative phase
Date of planting-15.3.2012

Date of harvest-28.1.2013

- I. V. Project No : AS 66
- VI. Project Title : Priming of cane node for accelerating germination in sugarcane.
- VII. Serial number of the year of experimentation : I year
- VIII. Location : Regional Agricultural Research Station, Anakapalle
- IX. Objectives : 1. To find out suitable cane node priming technique.
2. To assess the effect of cane node on acceleration of germination.
- X. Technical programme on which the report is based : Project Coordinator, AICRP on Sugarcane, Agronomy / Soil Science sub-committee. Technical Programme of work for the year 2012-13 finalized during biennial workshop of AICRP (Sugarcane) held at TNAU Coimbatore 19th and 20th October, 2012.
- a. Treatments :
- T1: Un-primed cane node
- T2: Treating cane node in hot water in 50⁰C for 2 hours.
- T3: Treating cane node in hot water (50⁰ C) + urea solution (3%) for 2 hours.
- T4: Priming cane node with cattle dung, cattle urine and water in 1:2:5 ratio.
- T5: Conventional 3 bud sett planting.
- T6: Primed and sprouted cane node (incubated for four days after priming)
- (Put the single cane node in the slurry of cattle dung, cattle urine and water for 15 minutes. Take out the buds and put in decomposed FYM and cover it with sugarcane trash for 4-5 days for sprouting.)
- b. Design : RBD
- c. Replications : Four
- d. Plot size : 6.0 X 8.0 m
- e. Manuring : 112kg N + 100kg P₂O₅ + 120kg K₂O / ha.
Entire dose of phosphorous and potassium was applied as basal in furrows. Nitrogen was applied in two equal split doses at 45 and 90 days after planting.
- f. Irrigations : Irrigations were given once in 6 days during formative phase till the onset of monsoon rains. Once in 21 days during maturity phase from November till harvest.
- g. Date of harvesting : 09.02.2013
- h. Designation and name of the Participants : Dr. V. Gouri, Scientist (Agronomy)
Dr.T.Chitkala Devi, Professor(Agronomy)
Dr. MBGS. Kumari, Scientist (Agronomy)
Dr. K. Prasada Rao, Principal Scientist,(Sugarcane)
- i. Year of trial : I year
- j. Results recorded previously : New trial

k. Data recorded during the year:

Germination Percent:

Germination per cent is recorded at 20 and 40 days after planting and presented in table –9. At 40 DAP, among different priming cane node treatments, priming cane node with cattle dung, urine and water in 1:2:5 ratio recorded highest germination percent (71.7) and it was as par with the conventional 3 bud sett planting (74.2). Significantly lowest per cent germination was registered in un primed cane node plot (55.4).

Tiller population:

Tiller population was recorded at 90 and 150 days after planting and presented in table-9. At 150 DAP significantly higher tiller population was observed in conventional 3 bud sett planting (1,23,437). Among different priming cane node methods, planting of cane nodes primed with cattle dung, urine and water in 1:2:5 ratio recorded higher number of tillers (1,09,063).

Number of millable canes/ha:

Significant differences were observed in number of millable canes due to different priming cane node treatments. Conventional 3 bud sett planting recorded significantly higher number of millable canes (67,188) but it was on par with priming cane node with cattle dung, urine and water in 1:2:5 ratio (65,625) and treating cane node in hot water at 50⁰C + urear solution (3%) for 2 hours (62,813). Un primed cane node plot registered significantly lower number of millable canes (58,438).

Juice sucrose (%):

Cane juices were analysed for sucrose content at harvest (Table-9). Juice sucrose values did not vary significantly due to different priming cane node treatments. However, the per cent juice sucrose values in different treatments varied between 16.3 to 17.8.

Commercial cane sugar (CCS%):

Commercial cane sugar was calculated treatment wise and presented in table – 9. CCS% did not vary significantly due to different treatments. However, highest CCS% was recorded in conventional 3 budded sett planting (13.9).

Cane yield (t/ha):

Cane yield was recorded at harvest and presented in Table -9. Among different priming cane node treatments, planting of primed cane nodes with cattle dung, urine and water in 1:2:5 ratio recorded significantly higher cane yield of 73.5 t/ha and it was found on par with conventional 3 bud sett planting (75.3 t/ha). Significantly lowest cane yield of 63.3 t/ha was registered in un-primed cane node treatment.

Sugar yield:

Sugar yield was computed treatment wise. Sugar yield followed the same trend as that of cane yield.

Summary:

Priming of cane nodes in different methods for accelerating the germination in sugarcane was studied at Regional Agricultural Research Station, Anakapalle during 2012-13 season. The results indicated that conventional 3 bud sett planting recorded significantly higher number of millable canes (67188) and cane yield (75.3 t/ha). Priming cane node with cattle dung, urine and water in 1:2:5 ratio performed better and registered higher cane yield of 73.5 t/ha among different priming cane node treatments.

Table 9 - Yield attributes, yield and quality of sugarcane as influenced by priming of cane node treatments

Treatment	Germination % at 20DAS	Germination % at 40DAS	Tiller population at 90 DAP	Tiller population at 150 DAP	NMC	LMC (cm)	Cane yield (t/ha)	Sucrose (%)	CCS (t/ha)	Sugar yield (t/ha)
T1:Un-primed cane node	35.9	55.4	75065	80,000	58,438	224.8	63.3	16.5	12.8	8.2
T2: Treating cane node in hot water in 50 ⁰ C for 2 hours.	52.5	62.7	84441	104375	60,000	226.6	66.0	16.5	12.0	7.9
T3: Treating cane node in hot water (50 ⁰ C) + urea solution (3%) for 2 hours	53.8	67.8	89518	105625	62,813	232.1	69.1	17.1	12.2	8.4
T4: Priming cane node with cattle dung, cattle urine and water in 1:2:5 ratio	54.2	71.7	91148	109063	65625	232.5	73.5	17.8	13.1	9.6
T5: Conventional 3 bud settplanting.	53.3	74.2	96419	123437	67188	237.8	75.3	17.7	13.9	10.5
T6: Primed and sprouted cane node (incubated for four days after priming)	43.3	56.4	79906	99375	58,750	224.8	64.4	16.3	11.9	7.7
SEm±	2.47	2.17	3113	17605	1913	-	0.78	-	0.89	-
C.D (0.05)	7.47	6.56	9382	5840	5769	NS	2.35	NS	NS	-

Date of planting- 27.3.2012

Date of harvesting- 9.2.2013