

AICRP(Sugarcane)
ANNUAL REPORT FOR THE YEAR
2013-14

AGRONOMY
Regional Agricultural Research Station,
Anakapalle

**Rainfall, Mean Temperatures and RH during crop growth period of 2013-14 at
Regional Agricultural Research Station, Anakapalle.**

Month	Rainfall (mm)				Temperature(°C)				Relative Humidity(%)			
	Normal		Actual		Max. Temp.		Min. Temp.		F.N		A.N	
	Rainfall	Rainy days	Rainfall	Rainy Days	Normal	Actual	Normal	Actual	Normal	Actual	Normal	Actual
January, 2013	8.4	1	19.8	1	30.5	30.1	14.3	14.9	94	95	49	56
February, 2013	21.2	1	5	1	32.5	31.7	15.5	15.0	94	91	46	44
March, 2013	25.6	1	5	1	34.7	35.0	19.2	17.5	92	88	49	42
April, 2013	31.6	2	38.0	4	35.7	35.1	22.4	25.1	87	89	54	55
May, 2013	82.5	4	5.4	1	36.7	37.6	24.0	25.1	85	86	57	55
June, 2013	113.6	6	43.2	5	35.5	34.8	24.2	23.8	84	86	60	59
July, 2013	137.3	9	29.6	4	33.1	33.1	23.3	23.2	89	88	67	66
August, 2013	137.4	9	155.2	9	32.9	32.5	22.9	22.7	89	90	67	68
September, 2013	235.5	11	149.2	10	32.8	32.9	22.3	21.8	92	92	69	66
October, 2013	218.3	8	573.6	10	32.2	30.4	20.7	21.3	91	92	65	72
November, 2013	105.1	3	88.4	2	31.1	30.0	17.6	17.4	90	91	55	65
December, 2013	19.7	1	0	0	30.4	29.5	14.7	14.6	91	90	49	54
TOTAL	1136.2	56	1112.4	48					1078	1078	687	702
Mean					33.18	32.73	20.09	20.2	89.83	89.83	57.25	58.5

AGRONOMY

- I. V. Project No : AS 42
VI. Project Title : Agronomic evaluation of new promising sugarcane genotypes (Mid late) 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 2013-14 finalized during biennial workshop of AICRP (Sugarcane) held at TNAU, Coimbatore on 19th and 20th October, 2012.
- a. Treatments :
Varieties : Four
V1: 2004A104
V2: 2007A177
V3: 2007A126
V4: 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 : 7.0m X 4.0 m
- e. Manuring : N as per the treatments applied in two equal splits at 45 and 90 days after planting. P₂O₅ & K₂O as per the recommended dose were applied as basal at the time of 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 planting : 23.02.2013
- h. Date of harvesting : 25.03.2014
- i. Designation and name of the Participants : Dr. V. Gouri, Scientist (Agronomy)
Dr. MBGS. Kumari, Scientist (Agronomy)
Dr. K. Prasada Rao, Principal Scientist,(Sugarcane)
- j. Year of trial : I year
- k. Results recorded previously : New set of mid late varieties from AVT

I. Data recorded during the year:

Initial Soil Analysis:

Initial soil analysis was done. Soil is neutral in pH (7.22), normal in E.C(0.187dSm⁻¹) low in organic carbon (0.46%), low in available nitrogen (192 kg N /ha), medium in available phosphorus (47.9 kg/ha) and high in available potassium (251 kg / K₂O /ha).

Germination:

Germination per cent was recorded at 35 days after planting expressed in % and presented in table-1. Germination percentage did not vary significantly due to application of different doses of nitrogen fertilizers. 2007A126 variety recorded significantly higher germination percentage than other new mid late genotypes and the check variety Co7219.

Tiller Population at 180 DAP:

Tiller population at 180 days after planting varied significantly with mid late sugarcane genotype and levels of nitrogen. Among different sugarcane genotypes 2004A104 and 2007A126 recorded significantly higher number of tillers (Table-1). Application of nitrogen at 125% recommended dose registered significantly higher number of tillers (1,15,413/ha) than 75% (1,04,810/ha) and 100% (1,08,437/ha) recommended nitrogen.

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 125% recommended dose registered significantly higher number of millable canes (67,909/ha) than 100% (61,767/ha) recommended nitrogen. Significantly lowest number of millable canes were recorded in application of 75% (56,490/ha) plot. Among the new genotypes 2007A126 had higher number of millable canes (71,314/ha) than 2004A104 (59,294/ha) and 2007A177 (42,452/ha). However the check variety Co7219 recorded higher number of millable canes (75,160/ha) than other test varieties..

Juice sucrose (%):

Cane juices were analyzed for sucrose content at harvest (Table – 1). Percent juice sucrose did not vary with sugarcane genotypes and application of different nitrogen doses.

Commercial cane sugar(%):

Commercial cane sugar percent was calculated treatment wise. Commercial cane sugar percent did not vary with application of different doses of nitrogen fertilizers. Among genotypes, the check variety Co7219 recorded higher per cent CCS percentage (12.1) as compared to new genotypes under study..

Cane yield (t/ha):

Cane yield per plot was recorded expressed in t/ha and presented in Table 1. Cane yield of new mid late sugarcane genotypes under irrigated conditions varied significantly due to different N levels. Application of nitrogen at 125% recommended dose registered significantly higher cane yield of 85.1 t/ha than lower levels of 75% (74.1 t/ha) and 100% (78.7 t/ha) recommended nitrogen. Among the new mid late genotypes under test, 2007A126 proved superior (84.1 t/ha) than 2004A104 (76.1 t/ha) and 2007A177 ((68.0 t/ha). However the check variety Co 7219 recorded higher cane yield of 88.9 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., 2004A104, 2007A177 and 2007A16 along with check Co 7219 was studied under graded levels of Nitrogen under irrigated conditions at Regional Agricultural Research Station, Anakapalle during 2013-14 season. The results showed that application of 'N' at 125% recommended dose registered significantly higher cane yield of 85.1 t/ha than lower levels of 75% (74.1 t/ha) and 100% (78.7 t/ha) recommended nitrogen. Among the three new mid late genotypes under test 2007A126 proved superior (84.1 t/ha) to 2004A104 (76.1 t/ha) and 2007A177 ((68.0 t/ha). Due to heavy rainfall (573.6 mm) received during the month of October when crop is in grand growth and maturity phase the experimental field was subjected to water logging and the crop was lodged, under such abnormal situation. As check such the variety Co 7219 performed better and recorded higher cane yield (88.9 t/ha).

Table -1: Yield and quality of promising sugarcane genotypes (mid late group-plant crop) as influenced by different levels of nitrogen under irrigated conditions.

Treatment	Germination (%)	Tiller population/ha at 180DAP	NMC/ha	Cane yield (t/ha)	Juice sucrose (%)	CCS (%)	Sugar yield (t/ha)
Varieties							
2004A104	78.9	1,18,571	59,294	76.1	15.8	11.8	9.0
2007A177	60.0	89,271	42,452	68.0	16.1	11.7	7.9
2007A126	82.9	1,17,589	71,314	84.1	15.3	11.1	9.4
Co7219	72.3	1,12,782	75,160	88.9	16.6	12.1	10.8
SEm ±	0.87	1722	472	0.94	-	0.35	
C.D (0.05)	2.6	5049	1383	2.8	NS	0.50	-
N levels (Rec.dose-112 Kg N/ha)							
N1- 75% RDN	73.8	1,04,810	56,490	74.1	16.4	11.8	8.7
N2-100% RDN	72.0	1,08,437	61,767	78.7	15.3	11.6	9.1
N3-125% RDN	74.7	1,15,413	67,909	85.1	16.6	11.7	10.0
SEm ±	-	1491	408	0.81	-	NS	
C.D (P=0.05)	NS	4373	1197	2.4	NS		-
Interaction				NS	NS	NS	
C.V %	3.5	4.0	3.0	4.5	9.0		

- 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 : II year
- VIII. Location : Regional Agricultural Research Station, Anakapalle
- IX. Objectives : To work out optimum nutrient requirement of sugarcane varieties from advanced varietal trial (Early).
- 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 2013-14 finalized during biennial workshop of AICRP (Sugarcane) held at TNAU, Coimbatore on 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 planting : 08.01.2013
- h. Date of harvesting : 24.12.2013
- i. Designation and name of the Participants : Dr. V. Gouri, Scientist (Agronomy)
 Dr. MBGS. Kumari, Scientist (Agronomy)
 Dr. K. Prasada Rao, Principal Scientist,(Sugarcane)
- j. Year of trial : II year
- k. Results recorded previously : During 2012-13 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 yields of both new early sugarcane genotypes 2004A55 (87.3t/ha) and 2001A63 (88.0 t/ha) were on par and both were significantly superior as compared to check variety 93A145 (82.9 t/ha).

I. Data recorded during the year:

Initial Soil Analysis:

Initial soil analysis was done. Soil is neutral in pH (7.46), normal in E.C(0.18 dSm⁻¹) low in organic carbon (0.56%), low in available nitrogen (241 kg N /ha), medium in available phosphorus (66.5 kg/ha), high in available potassium (242 kg / K₂O /ha).

Germination:

Germination percentage was recorded at 35 days after planting expressed in % and presented in Table 2. Not much variation was observed in germination per cent with nitrogen doses. Among different genotypes 2004A55 recorded highest per cent germination than 2001A63 and test variety 93A145.

Number of millable canes/ha:

Number of millable canes varied significantly due to different nitrogen doses (Table 2). Application of nitrogen fertilizer at 100% and 125% recommended dose to early sugarcane genotypes significantly increased the number of millable canes (99,073/ha and 98,003/ha respectively) as compared to 75% recommended dose of nitrogen fertilizer (92,592/ha). Among the genotypes 2004A55 recorded significantly higher number of millable canes (1,02,604/ha) than 2001 A63 (98,003/ha) and check variety 93A145 (95,920/ha).

Juice Sucrose (%):

Significant difference in juice sucrose (%) was not observed either with genotypes or doses of nitrogen.

Commercial cane sugar per cent:

Commercial cane sugar percent was calculated treatment wise. Commercial cane sugar percent did not vary with the levels of nitrogen fertilizer. Among different new early sugarcane genotypes 2004A55 registered higher CCS % but found on par with check variety 93A145 (Table-2).

Cane yield (t/ha):

Cane yield was recorded at harvest and the data are presented in table-2. Cane yield of early maturing sugarcane genotypes differed significantly due to different levels of nitrogen. Application of 125% recommended dose of N registered significantly higher cane yield of 93.1 t/ha as compared to 75% RDN (86.7 t/ha) but found on par with application of 100% recommended nitrogen (89.7 t/ha). New early promising genotypes 2004 A 55 (93.7 t/ha) and 2001 A 63 (91.1 t/ha) registered significantly higher cane yields than the check variety 93 A 145.

Sugar yield:

Sugar yield was calculated based on CCS% and cane yield. Significant variations were not found in sugar yield both with the levels of nitrogen and genotypes.

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 2013-14 season. The results showed that application of nitrogen at 125% (93.1t/ha) and 100% (89.7 t/ha) recommended dose registered significantly higher cane yield than 75% recommended dose of nitrogen (86.7 t/ha). The cane yield of both new early sugarcane genotypes 2004A55 (93.7t/ha) and 2001A63 (91.1 t/ha) were on par and significantly superior as compared to check variety 93A145 (88.6 t/ha).

Table -2:Yield and quality of promising sugarcane genotypes (Early group-plant crop) as influenced by different levels of nitrogen under irrigated conditions.

Treatment	Germination (%)	NMC/ha	Cane yield (t/ha)	Juice sucrose (%)	CCS (%)	Sugar yield (t/ha)
Varieties						
2004A55	75.9	1,02,604	93.7	16.2	13.4	12.4
2001A63	69.4	98,003	91.1	16.1	12.8	11.9
93A145	68.7	95,920	88.6	16.4	13.8	12.1
SEm ±	1.02	713	1.24	-	0.22	-
C.D (0.05)	3.0	2092	3.7	NS	0.65	NS
N levels (Rec.dose-112 Kg N/ha)						
N1- 75% RDN	71.4	92,592	86.7	16.2	13.1	11.4
N2-100% RDN	73.1	99,073	89.7	16.4	13.7	12.4
N3-125% RDN	69.6	98,147	93.1	16.3	13.4	12.1
SEm ±	1.2	824	1.44	-	-	-
C.D (P=0.05)	3.4	2416	4.2	NS	NS	NS
Interaction						
VxN	NS	NS	NS	NS	NS	NS
C.V %	5.3	3.0	4.5	5.3	5.1	9.13

- III. V. Project No : AS 64
 VI. Project Title : Response of sugarcane to different plant nutrients in varied agro ecological situations.
 VII. Serial number of the year of experimentation : III 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 2013-14 finalized during Biennial workshop of AICRP (Sugarcane) held at TNAU, Coimbatore on 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 : 7.0mX 5.6m
 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 planting : 31.1.2013
 h. Date of harvesting : 28.1.2013
 i. Designation and name of the Participants : Dr. V. Gouri, Scientist (Agronomy)
 Dr.M.B.G.S. Kumari, Scientist (Agronomy)
 Dr. K. Prasada Rao, Principal Scientist (Sugarcane)
 j. Year of trial : III year
 k. Results recorded previously : During 2012-13 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

I. Data recorded during the year:

Initial soil analysis:

Initial soil analysis was done. The soil is low in organic carbon (0.44%), low in available nitrogen (208 kg N /ha), medium in available phosphorus (39.1 kg/ha), high in available potassium (325 kg / K₂O /ha), optimum in Sulphur , low in Zinc (0.44 ppm), low in Iron (2.7 ppm) and sufficient in Manganese (2.5 ppm).

Germination:

Germination was recorded at 35th day after planting expressed in % and presented in table-3. 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 (88.6 and 87.9 respectively) whereas only nitrogen applied plots registered 80.0 per cent Control plot (no fertilizer) registered lesser germination per cent of 79.5 per cent.

Number of tillers at 180 DAP:

Number of tillers at 180 days after planting was recorded at harvest and data are presented in table -3. Application of N,P and K along with micronutrients on soil test basis recorded significantly higher number of tillers at 180 DAP and found on par with application of N, P, K + Fe or N, P, K + S + Zn + Fe+ Mn or N, P, K + S + Zn + Fe or N ,P, K + Zn. Control plot recorded significantly less number of tillers (1,25,714) at 180 DAP.

Length of Millable Canes (cm):

Length of millable cane was recorded at harvest and data is presented in table -3. Application of N P K + S + Zn + Fe + Mn (300.1 cm) registered significantly higher length of millable canes as compared to application of other nutrient combinations. No fertilizer applied plot recorded lesser length of millable canes (244.0 cm).

Number of millable canes/ha:

Number of millable canes was recorded at harvest and data are presented in table -3. Application of N,P and K along with micronutrients on soil test basis recorded significantly higher number of millable canes (89,912/ha) and it was on par with application of N P K + S + Zn + Fe + Mn (88,920/ha) than other nutrient treatments. No fertilizer applied plot (62,102/ha) recorded significantly lower number of millable canes .

Cane yield (t/ha):

Cane yield was recorded at harvest and the data are presented in table-3. Application of N,P and K along with micronutrients on soil test basis (91.6 t/ha) registered significantly higher cane yield as compared to application of N alone (80.7 t/ha) or N and P (82.0 t/ha) or application of FYM @ 20 t/ha (73.3 t/ha), but found on par with application of N, P, K + S + Zn + Fe +Mn (91.0 t/ha) or NPK +S+Zn (90.7 t/ha) or N,P,K + Fe (90.5 t/ha) or of N, P, K + S + Zn + Fe (90.3 t/ha) or NPK + Mn (89.7 t/ha) or NPK + Zn (89.1 t/ha) or N, P, K + S (87.5 t/ha) or N,P and K (87.2 t/ha). No fertilizer applied plot registered significantly lower cane yield of 55.0 t/ha.

Juice Sucrose (%):

Cane juices were analysed for sucrose content at harvest (Table – 3). Juice sucrose values did not vary significantly due to different nutrient treatments.

Commercial cane sugar:

CCS % varied significantly due to different nutrient treatments. Application of N,P and K along with micronutrients on soil test basis recorded higher CCS% (14.7) as compared to other nutrient combinations.

Sugar yield (t/ha):

Sugar yield was calculated based on CCS% and cane yield. Sugar yield ranged from 11.0 to 13.5 t/ha in different nutrient applied plots. No fertilizer applied plot registered the lowest sugar yield of 7.5 t/ha.

Summary:

Effect of different macro and micro nutrients along with sulphur was studied during 2013-14 season at RARS, Anakapalle. The results of the study indicated that, application of N,P and K along with micronutrients on soil test basis (91.6 t/ha) registered significantly higher cane yield as compared to application of N alone (80.7 t/ha) or N and P (82.0 t/ha) or application of FYM @ 20 t/ha (73.3 t/ha), but found on par with application of N, P, K + S + Zn + Fe +Mn (91.0 t/ha) or NPK +S+Zn (90.7 t/ha) or N,P,K + Fe (90.5 t/ha) or N, P, K + S + Zn + Fe (90.3 t/ha) or NPK + Mn (89.7 t/ha) or NPK + Zn (89.1 t/ha) or N, P, K + S (87.5 t/ha) or N,P and K (87.2 t/ha). No fertilizer applied plot registered significantly lower cane yield of 55.0 t/ha.

Table -3: Yield attributes, yield and quality of sugarcane as influenced by application of different nutrients.

Treatments	Germination Per cent	No.of Tillers at 180 DAP	LMC(cm)	NMC /ha	Cane yield (t/ha)	Juice sucrose(%)	CCS (%)	Sugar yield (t/ha)
T1: Control (No Fertilizer)	79.5	1,25,714	244.0	62,102	55.0	16.9	13.7	7.5
T2: N	80.0	1,30,238	280.9	65,120	80.7	16.5	13.6	11.0
T3: NP	80.5	1,32,619	282.3	79,210	82.0	18.0	14.1	11.6
T4: NPK	87.4	1,34,286	285.8	82,112	87.2	16.9	13.7	11.9
T5: NPK +S	88.7	1,35,000	295.2	82,780	87.5	15.8	12.1	10.6
T6: NPK + Zn	85.2	1,39,285	292.0	84,971	89.1	16.4	14.2	12.7
T7: NPK + Fe	85.9	1,42,619	288.8	86,218	90.5	16.1	13.2	11.9
T8: NPK +Mn	82.8	1,36,905	290.6	85,121	89.7	17.3	14.0	12.6
T9: NPK + S + Zn	84.6	1,38,095	297.1	86,980	90.7	17.6	14.0	12.7
T10: NPK + S + Zn +Fe	86.5	1,39,285	295.2	86,012	90.3	17.5	14.5	13.1
T11: NPK + S + Zn +Fe + Mn	88.6	1,41,428	300.1	88,920	91.0	17.5	13.2	12.0
*T12: Soil test based fertilizer application	87.9	1,42,851	297.2	89,912	91.6	17.1	14.7	13.5
T13: FYM @ 20 t/ha	82.6	1,28,333	245.4	71,812	73.3	16.4	13.7	10.0
S.Em _±	-	1232	2.37	480	1.69	-	0.49	-
C.D. (P=0.05)	-	3596	6.9	1400	4.92	NS	1.43	-

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

- 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 : II 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 2013-14 finalized during biennial workshop of AICRP (Sugarcane) held at TNAU, Coimbatore on 19th and 20th October, 2012.
- a. Treatments :
- T1: Un-primed cane node
- T2: Treating cane node in hot water at 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 m X 6.4 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 planting : 7.3.2013
- h. Date of harvesting : 24.1.2014
- i. Designation and name of the Participants : Dr. V. Gouri, Scientist (Agronomy)
Dr. MBGS. Kumari, Scientist (Agronomy)
Dr. K. Prasada Rao, Principal Scientist, (Sugarcane)
- j. Year of trial : II year
- k. Results recorded previously : During 2012-13 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

I. Data recorded during the year:

Germination:

Germination is recorded at 30 and 40 days after planting expressed in % and presented in table-4. At 40 DAP, conventional 3 bud sett planting recorded significantly higher per cent germination(85.9). Among different priming cane node treatments, priming cane node with cattle dung, urine and water in 1:2:5 ratio recorded highest germination percent (82.0). Significantly lowest per cent germination was registered in un primed cane node plot (58.8).

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 (84,141/ha) but it was on par with priming cane node with cattle dung, urine and water in 1:2:5 ratio (79,471/ha). Un primed cane node plot registered significantly lower number of millable canes/ha (73,994/ha).

Juice sucrose (%):

Cane juices were analysed for sucrose content at harvest (Table-4). 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 17.7 to 18.7.

Commercial cane sugar (CCS%):

Commercial cane sugar was calculated treatment wise and presented in table -4. CCS% did not vary significantly due to different treatments. However slightly high CCS% was recorded in treating cane node in hot water (50^oC)+ urea solution (3%) (Table-4).

Cane yield (t/ha):

Cane yield was recorded at harvest and presented in Table -4. Conventional 3 bud sett planting recorded significantly higher cane yield (84.6 t/ha) than with primed cane nodes planting. However, it was found on par with planting of primed cane nodes treated with cattle dung, urine and water in 1:2:5 ratio (79.5 t/ha). Significantly lowest cane yield of 63.3 t/ha was registered in un-primed cane node treatment (73.4 t/ha).

Sugar yield:

Sugar yield was computed treatment wise. Sugar yield ranged from 10.3 t/ha to 11.5t/ha.

Summary:

Priming of cane nodes in different methods for accelerating the germination in sugarcane was studied at Regional Agricultural Research Station, Anakapalle during 2013-14 season. The results indicated that conventional 3 bud sett planting recorded significantly higher number of millable canes (84,141/ha) and cane yield (84.6 t/ha). Priming cane node with cattle dung, urine and water in 1:2:5 ratio performed better and registered higher cane yield of 79.5 t/ha among different priming cane node treatments and it was on par with the conventional three budded sett planting.

Table 4 - Yield attributes, yield and quality of sugarcane as influenced by priming of cane node treatments

Treatment	Germination (%) at 30DAP	Germination (%) at 40DAP	NMC/ha	Cane yield (t/ha)	Sucrose (%)	CCS (%)	Sugar yield (t/ha)
T1:Un-primed cane node	46.7	58.8	73,994	73.4	18.8	14.6	10.7
T2: Treating cane node in hot water in 50 ⁰ C for 2 hours.	65.4	75.8	76,238	75.3	17.7	14.1	10.6
T3: Treating cane node in hot water (50 ⁰ C) + urea solution (3%) for 2 hours	62.2	80.9	77,227	78.7	18.6	14.6	11.5
T4: Priming cane node with cattle dung, cattle urine and water in 1:2:5 ratio	70.5	82.0	79,471	79.5	18.3	14.1	11.2
T5: Conventional 3 bud settplanting.	75.8	85.9	84,141	84.6	18.4	14.0	11.4
T6: Primed and sprouted cane node (incubated for four days after priming)	49.2	60.3	74,712	74.6	17.7	13.8	10.3
SEm _±	2.4	1.09	1742	1.8	-	-	-
C.D (0.05)	7.3	3.3	5249	5.3	NS	NS	NS
C.V(%)	7.8	2.9	4.5	4.8	5.5	3.0	6.3