

**All India Coordinated Research Project on Sugarcane
Zonal Agriculture Research Station (J.N.K Vishwa Vidhyalaya)
Powarkheda- 461 110 (M.P.)**

ZARS/ Sugarcane /2015/.....

Dated: 15.07.2015

To,
Head,
Dr. T.K. Srivastava,
Division of Crop Production,
Indian Institute of Sugarcane Research,
Lucknow – 226002 (U.P.)

Through: Proper channel

Sub: Annual Report of AICRP on Sugarcane –Crop Production for the year of 2014-2015

Sir,

Please find enclosed herewith “Annual Progress Report” of AICRP on Sugarcane-Crop Production, ZARS, Powarkheda (M.P.) for the year 2014-2015. Submitted for your information and necessary action please.

Kindly acknowledge the receipt of the same.

With regards,

Yours faithfully

(O. Toppo)

ZARS/Sugarcane/2015 /

Dated:

C.C. to,

- 1. Dr. O. K. Sinha, Project Coordinator, AICRP on Sugarcane, Indian Institute of Sugarcane Research, P.O. Dilkusha, LUCKNOW- 225 002 (U. P.)**
- 2. Director Research Services, J.N. Krishi Vishwa Vidyalaya, Adhartal, Jabalpur – 4 (M.P.)**
- 3. Project In charge, AICRP on Sugarcane, ZARS, Powarkheda (M.P.)**

-for information & necessary action please.

(O. Toppo)

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ANNUAL PROGRESS REPORT

2014-2015

CROP PRODUCTION



*ALL INDIA COORDINATED RESEARCH PROJECT
ON SUGARCANE*



JAWAHARLAL NEHRU KRISHI VISHWA VIDYALAYA
ZONAL AGRICULTURAL RESEARCH STATION
POWARKHEDA – 461 110 (M. P.)

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Standard Meteorological week wise weather data
Zonal Agricultural Research Station pawarkheda- 2014

SMW	Max. temp	Min temp.	R .H mor.	R .H eve.	Rainfall (mm)	Total Rainfall (mm)	Rainy days
1 (Jan)	28.4	13.0	67.0	24.0	0.0	0.0	
2 (Jan)	27.8	9.0	72.0	33.0	5.4	5.4	1
3 (Jan)	21.1	10.8	81.0	39.0	11.6	17.0	1
4 (Jan Feb)	22.0	10.4	89.0	33.0	10.2	27.2	1
5 (Feb)	29.2	9.4	80.0	27.0	0.0	27.2	
6 (Feb)	32.1	11.0	84.0	39.0	0.0	27.2	
7 (Feb)	27.9	11.0	66.0	24.0	0.0	27.2	
8 (Feb)	33.0	8.9	65.0	24.0	2.0	29.2	1
9 (March)	28.4	12.6	75.0	26.0	71.2	100.4	3
10 (March)	32.5	14.4	71.0	28.0	0.0	100.4	
11(March)	38.7	17.0	74.0	26.0	0.0	100.4	
12 (March)	38.5	16.0	57.0	16.0	0.0	100.4	
13 (March)	39.4	19.0	62.0	20.0	0.0	100.4	
14 (April)	40.2	18.4	28.0	13.0	0.0	100.4	
15 (April)	40.4	18.6	21.0	7.0	0.0	100.4	
16 (April)	40.9	20.7	47.0	9.0	8.2	108.6	1
17 (April)	41.9	20.2	40.0	9.0	0.0	108.6	
18 (May)	42.9	22.4	24.0	8.0	0.0	108.6	
19 (May)	40.1	22.0	43.0	15.0	0.0	108.6	
20 (May)	41.9	21.0	38.0	12.0	0.0	108.6	
21 (May)	43.1	22.4	34.0	9.5	0.0	108.6	
22 (May)	44.8	25.4	36.0	11.0	2.4	111.0	1
23 (June)	46.2	27.2	51.0	11.0	0.0	111.0	
24 (June)	39.5	25.4	52.0	22.5	60.6	171.6	3
25 (June)	37.3	24.6	70.0	37.0	22.8	194.4	2
26 (June)	38.5	24.3	56.0	27.0	10.2	204.6	1
27 (July)	37.2	24.6	64.0	29.0	26.3	230.9	2
28 (July)	34.1	23.7	69.0	29.0	117.4	348.3	3
29 (July)	29.2	21.2	87.0	65.0	96.8	445.1	6
30 (July)	26.5	20.2	90.0	56.0	145.8	590.9	5
31 (Aug)	30.5	21.7	93.0	68.0	35.6	626.5	2
32 (Aug)	28.8	21.3	90.0	63.0	60.5	687.0	4
33 (Aug)	30.4	20.4	90.0	62.0	0.0	687.0	
34 (Aug)	35.0	22.6	84.0	56.0	6.2	693.2	3
35 (Aug)	32.8	20.6	82.0	49.0	68.4	761.6	4
36 (Sept)	31.5	21.2	93.0	65.0	192.4	954.0	5
37 (Sept)	28.9	20.5	81.0	48.0	14.9	968.9	4
38 (Sept)	33.10	17.40	90.00	48.00	50.20	1019.1	5

39 (Sept)	35.80	19.50	89.00	23.00	0.00	1019.1	0
40 (Oct)	36.10	19.00	69.00	22.00	14.90	1034.0	2
41 (Oct)	36.10	16.40	75.00	18.00	0.00	1034.0	0
42 (Oct)	34.90	19.40	65.00	22.00	0.00	1034.0	0
43 (Oct)	34.50	16.00	58.00	20.00	0.00	1034.0	0
44 (Nov)	34.70	13.60	84.00	20.00	0.00	1034.0	0
45 (Nov)	34.50	14.00	55.00	21.00	0.00	1034.0	0
46 (Nov)	33.60	11.60	75.00	22.00	0.00	1034.0	0
47 (Nov)	32.20	9.20	68.00	15.00	0.00	1034.0	0
48 (Nov)	33.00	10.00	57.00	15.00	0.00	1034.0	0
49 (Dec)	31.60	8.90	56.00	17.00	0.00	1034.0	0
50 (Dec)	30.70	9.80	67.00	14.00	32.60	1066.6	2
51 (Dec)	27.90	6.60	78.00	21.00	0.00	1066.6	0
52 (Dec)	27.70	5.10	77.00	22.00	0.00	1066.6	0

**ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE
ZONAL AGRICULTURAL RESEARCH STATION POWARKHEDA – 461 110 (M. P.)
ANNUAL PROGRESS REPORT (2014-15)**

CROP PRODUCTION

Project No. - AS 42 (A)

Title - Agronomic evaluation of new promising genotypes of sugarcane (early maturity).

Objective: To work out agronomy of early maturing sugarcane genotypes from Advance Varietal Trial (AVT).

Treatments : 9 (3 varieties x 3 fertility levels)

- ❖ **Varieties :** Co 06022, Co 06002, Co C 671
- ❖ **Fertilizer levels:**
 1. 75% of the recommended dose of NPK (300:80:60)
 2. 100% of the recommended dose of NPK (300:80:60)
 3. 125% of the recommended dose of NPK (300:80:60)

Design: RBD

Replications: 03 **Planting date :** 13-12-2013

Plot Size: 5.4 x 6.0 m² (6 rows at 90 cm row spacing)

Soil health : Soil pH - 7.46, EC – 0.39 mmhos/cm, OC (%) - 0.61%, Available N – 237 kg/ha, P₂O₅ – 16.63 kg/ha and K₂O – 475 kg/ha

Results:

Germination (%): The germination percentage did not differ significantly. The germination percentage recorded higher with Co 06022 (68.75%) than Co C 671 (67.94%) and Co 06002 (66.65%). The germination percentage was not influenced by different fertility levels.

Table -1 (AS-42:A): Effect of different fertility levels on growth, yield and quality of early maturing sugarcane genotypes at Powarkheda.

S. No.	Treatments	Germination (%)	Tillers (000'/ha)	Plant Height (cm)	NMC (000'/ha)	Brix (%)	Cane Yield (t/ha)
Genotypes							
1	Co 06022	68.75	104.59	252	100.82	21.36	98.87
2	Co 06002	66.65	94.10	234	90.42	21.33	88.61
3	Co C 671	67.94	99.00	236	95.09	21.85	93.20
	S Em +	2.48	1.78	2.64	1.76	0.17	1.75
	CD at 5%	NS	5.34	7.91	5.28	NS	5.24
Fertilizer dose (% Recommended NPK)							
1	75%	68.05	95.33	231	91.59	21.47	89.74
2	100%	68.05	100.85	243	96.94	21.52	95.06
3	125%	68.23	101.50	248	97.80	21.55	95.88
	S Em +	2.48	1.78	2.64	1.76	0.17	1.75
	CD at 5%	NS	5.34	7.91	5.28	NS	5.24

Tillers (000'/ha): Among varieties Co 06022 showed significantly higher number of tillers which recorded (104.59) than Co C 671 (99.00) and Co 06002 (94.10) . The tillers recorded in-between Co C 671 and Co 06002 were at par. Fertility levels showed significant differences for tillers. The significantly higher number of tillers recorded with 125% recommended dose of NPK (101.50) as compared with 75% recommended dose of NPK (95.33). Both the levels of RDF NPK (100 and 125%) showed at par tillers but were significantly higher than the 75% RDF NPK.

Plant Height (cm): Among varieties Co 06022 showed significantly higher plant height (252 cm) as compared to Co C 671 (236 cm) and Co 06002 (234 cm). Fertilizer levels showed significant influence on plant height. The maximum plant height (248 cm) recorded with 125% RDF NPK and the differences were significantly higher than the plant height obtained due to application of 75% RDF NPK (231 cm). The plant height also increased significantly with the application of 100 % RDF NPK (243 cm) than 75% RDF NPK. Both the levels of RDF NPK (100 and 125%) showed at par plant height but were significantly higher than the 75% RDF NPK.

Number of Millable Canes (000'/ha): The NMC differed significantly due to varieties and fertility levels. Among varieties the NMC recorded significantly higher with Co 06022 (100.82) as compared to Co C 671 (95.09) and Co 06002 (90.42). The NMC recorded in-between Co C 671 and Co 06002 were at par. The NMC increased with the increase in fertilizer levels. Significantly higher NMC (97.80) recorded with 125% RDF NPK than 75% RDF NPK (91.59). The NMC recorded in between 100% RDF NPK and 125% RDF NPK were at par.

Brix (%): The brix values ranged from 21.33 to 21.85 per cent for varieties and 21.47 to 21.55 per cent in fertilizer levels. However, brix values did not differ significantly due to varieties and fertilizer levels.

Cane Yield (t/ha): Among varieties Co 06022 recorded significantly higher cane yield (98.87 t/ha) than Co C 671 (93.20 t/ha) and Co 06002 (88.61 t/ha) but the cane yield obtained at par in between Co C 671 (93.20 t/ha) and Co 06002 (88.61 t/ha). Application of fertilizer doses increased cane yield correspondingly with the increase in fertilizer levels and significantly higher cane yield (95.88 t/ha) obtained due to application of 125 % RDF NPK than 75% RDF NPK (89.74 t/ha). The cane yield obtained at par in-between 100 and 125 % RDF NPK.

Summary:

Results revealed that among the early genotypes Co 06022 gave significantly higher cane yield of (98.87 t/ha) than Co C 671 (93.20 t/ha) and Co 06002 (88.61 t/ha). Application of 125 % RDF NPK gave significantly higher cane yield of (95.88 t/ha) than 75 % RDF NPK (89.74 t/ha) but increase in cane yield was at par in-between 100 and 125% RDF NPK.

Project No. - AS 42 (B)

Title: Agronomic evaluation of new promising genotypes of sugarcane (Mid late maturity)

Objective: To work out agronomy of sugarcane genotypes from advanced varietal trial (AVT).

Treatments: 12 (4 varieties X 3 fertilizer levels)

❖ **Varieties:** Co 06010, Co 06015, Co 06027, Co JN 86- 600

❖ **Fertilizer levels:**

- i. 75% Recommended dose of NPK
- ii. 100% Recommended dose of NPK
- iii. 125% Recommended dose of NPK

Design: RBD,

Replication: 03 **Planting date:** 14.12.2013

Plot size: 5.4 X 6.0 m² (6 rows at 90 cm row spacing)

Soil health : Soil pH - 7.46, EC – 0.39 mmhos/cm, OC (%) - 0.61%, Available N – 237 kg/ha, P₂O₅ – 16.63 kg/ha and K₂O – 475 kg/ha

Results:

Germination (%): The germination percentage did not differ significantly due to varieties or fertility levels. However, germination percentage ranged from 67.44 to 68.34 percent for varieties and 67.57 to 68.12 percent for fertility levels.

Tillers (000'/ha): Among varieties Co 06027 recorded higher numbers of tillers (120.12) than Co JN 86-600 (105.00), but the tillers obtained at par in between Co 06027 (120.12) and Co 06010 (116.25), and Co 06015 (105.00) and Co JN 86- 600 (105.00). Application of fertilizer levels recorded higher number of tillers. Significantly higher number of tillers obtained at 125% RDF NPK (113.94) and 100% RDF NPK (113.32) as compared to number of tillers recorded with 75% RDF NPK (107.53). Number of tillers recorded at par in between 100 and 125% recommended dose of NPK.

Plant height (cm): Among varieties Co 06027 showed higher plant height (261 cm) as compared to Co 06010 (257 cm), Co 06015 (256 cm) and Co JN 86-600 (256 cm). The plant height recorded in between Co 06027, Co 06010, Co 06015 and Co JN 86-600 were at par. Fertilizer levels showed significant influence in plant height. Application of fertilizer levels increased plant height significantly and recorded higher plant height (264 cm) due to application of 125% RDF NPK than 75% RDF NPK (247 cm). Both the levels of RDF NPK (100 and 125%) showed at par plant height but were significantly higher than the 75% RDF NPK.

Brix (%): The brix values did not differ significantly either due to varieties or fertility levels. However, among varieties the brix value ranged from 21.20 to 22.15 for varieties and 21.90 to 21.91 per cent for fertility levels.

Table 2: (AS 42 B): Effect of different fertility levels on growth yield and quality of late maturing sugarcane genotypes at Powarkheda

S. No	Treatments	Germination (%)	Tillers (000'/ha)	Plant Height (cm)	NMC (000'/ha)	Brix (%)	Cane Yield (t/ha)
Genotypes							
1	Co 06010	68.34	116.25	257	112.99	22.13	111.41
2	Co 06015	67.44	105.00	256	101.92	22.14	100.68
3	Co 06027	67.64	120.12	261	116.83	22.15	115.22
4	Co JN 86-600	67.93	105.00	256	101.92	21.20	100.99
	S Em +	2.23	1.82	2.85	1.73	0.01	1.77
	CD at 5%	NS	5.32	8.32	5.05	NS	5.19
Fertilizer dose (% Recommended NPK)							
1	75% RDF	67.57	107.53	247	104.27	21.90	103.21
2	100% RDF	67.83	113.32	262	110.23	21.91	108.74
3	125% RDF	68.12	113.94	264	110.75	21.91	109.28
	S Em +	2.23	1.82	2.85	1.73	0.01	1.77
	CD at 5%	NS	5.32	8.32	5.05	NS	5.19

Number of Millable Canes (NMC '000'/ha): Among varieties the NMC population recorded significantly higher with Co 06027 (116.83) as compared to Co 06015 (101.92), and Co JN 86-600 (101.92), but the NMC obtained at par in between Co 06027 (116.83) and Co 06010 (112.99). The NMC increased significantly due to application of fertilizer levels. Significantly higher NMC (110.75) recorded with 125% RDF NPK than 75% RDF NPK (104.27). The NMC values recorded with 100 and 125% RDF NPK was at par.

Cane yield (t/ha): The cane yield was influenced significantly due to different varieties. However, among varieties Co 06027 recorded significantly higher cane yield of (115.22 t/ha) than Co 06015 (100.68 t/ha) and Co JN 86-600 (100.99 t/ha). but the cane yield obtained at par in between Co 06027 (115.22 t/ha) and Co 06010 (111.41 t/ha). Application of fertilizer doses increased cane yield with the increase in fertilizer levels. The cane yield was significantly higher with 125% RDF NPK (109.28 t/ha) than 75% RDF NPK (103.21 t/ha). The cane yield recorded with 100 and 125% RDF NPK was at par.

Summary: Results revealed that among the mid late genotypes Co 06027 gave significantly higher cane yield of (115.22 t/ha) than Co 06015 (100.68 t/ha), and Co JN 86-600 (100.99 t/ha), but the cane yield obtained at par in between Co 06027 (115.22 t/ha) and Co 06010 (111.41 t/ha). Application of 125 % RDF NPK gave significantly higher cane yield (109.28 t/ha) than 75 % RDF NPK (103.21 t/ha) but increase in cane yield was at par in-between 100 and 125% RDF NPK.

Project No. - AS 68

Title: Impact of integrated application of organics and inorganics in improving soil health and Sugarcane productivity .

Objective: To develop nutrient management strategy for sustaining soil health and sugarcane production.

Treatments: 13

T1. No organic + 50% RDF

T2. No organic +100% RDF

T3. No organic +Soil test based

T4. Application of FYM/Compost @ 20 t/ha + 50% RDF (inorganic source)

T5. Application of FYM/Compost @ 20 t/ha + 100% RDF (inorganic source)

T6. Appli. of FYM/Compost @ 20 t/ha +inorganic nutrient appli. Based on Soil test

T7. Appli. of FYM/Compost @ 10 t/ha + biofertilizer (Azoto./Aceto. +PSB) + 50% RDF

T8. Appli. of FYM/Compost @ 10 t/ha+ biofertilizer (Azoto./Aceto. +PSB) + 100% RDF

T9. Application of FYM/Compost @ 10 t/ha + biofertilizer (Azoto./Aceto. +PSB) +

Soil test based

Design: – RBD , **Replications :** 03 , **RDF:** (NPK 300:80:60 Kg/ha)

Plot Size: 5.4 x 6.0 m² (6 rows at 90 cm spacing)

Varieties : Co JN 86-600 **Planting date:** 24.01.2014

Soil Fertility status:

S.No.	Properties	Value
1.	Available N	237 kg/ha
2.	Available P ₂ O ₅	16.63 kg/ha
3.	Available K ₂ O	475 kg/ha
4.	S	16 kg/ha
5.	Zn	0.58 ppm
6.	Fe	6.36
7.	pH	7.46
8.	EC	0.39 mmhos/cm
9.	OC (%)	0.61 %
10.	Soil Texture	Clay loam (deep black soils)

Results:

Germination (%): The germination percentage was not influenced due to various treatments during experimentation. However, germination per cent ranged between 67.52 to 68.60 per cent among treatments.

Tillers (000'/ha): The number of tillers increased significantly due to application of FYM/Compost @ 20 t/ha +inorganic nutrient based on Soil test (119.34) as compared to no organic + 50% RDF (81.48), FYM/Compost @ 20 t/ha + 50% RDF (100.51), no organic +100% RDF (109.05) and no organic +Soil test base (109.57). The number of tillers obtained at par in between T₆, T₅, T₈, T₉ and T₇.

Plant height (cm): The plant height increased significantly due to application of FYM/Compost @ 20 t/ha +inorganic nutrient based on Soil test (297) as compared to no organic + 50% RDF (225), FYM/Compost @ 20 t/ha + 50% RDF (268), no organic +100% RDF (264), no organic +Soil test base (267) and FYM/Compost @ 20 t/ha + 50% RDF (268). The plant height obtained at par in between T₆, T₇, T₉, T₅ and T₈.

Number of millable canes (NMC 000'/ha): The number of millable canes increased significantly due to application of FYM/Compost @ 20 t/ha +inorganic nutrient based on Soil test (116.26) as compared to no organic + 50% RDF (78.40), FYM/Compost @ 20 t/ha + 50% RDF (97.43), no organic +100% RDF (105.97) and no organic +Soil test base (107.00). The NMC obtained at par in between T₆, T₅, T₈, T₉ and T₇.

Brix (%): The value of brix per cent did not differ significantly due to various treatments during experimentation. The brix percentage ranged between 20.94 to 21.25 per cent.

Cane Yield (t/ha): The cane yield increased significantly due to application of FYM/Compost @ 20 t/ha +inorganic nutrient based on Soil test (116.87 t/ha) as compared to no organic + 50% RDF (79.01 t/ha), FYM/Compost @ 20 t/ha + 50% RDF (98.25 t/ha), no

organic +100% RDF (106.69 t/ha) and no organic +Soil test base (107.72 t/ha). The NMC obtained at par in between T₆, T₅, T₈, T₉ and T₇.

Summary: The cane yield increased significantly due to application of FYM/Compost @ 20 t/ha +inorganic nutrient based on Soil test (116.87 t/ha) as compared to no organic + 50% RDF (79.01 t/ha), FYM/Compost @ 20 t/ha + 50% RDF (98.25 t/ha), no organic +100% RDF (106.69 t/ha) and no organic +Soil test base (107.72 t/ha). The NMC obtained at par in between T₆, T₅, T₈, T₉ and T₇.

Table 5.(AS-68): Effect of different treatments on growth, yield and quality of sugarcane.

S. No	Treatments	Germination (%)	Tillers (000'/ha)	Height (cm)	NMC (000'/ha)	Brix (%)	Yield (t/ha)
1	No organic + 50% RDF	67.98	81.48	225	78.40	21.13	79.01
2	No organic +100% RDF	67.52	109.05	264	105.97	21.24	106.69
3	No organic+Soil test base	68.60	109.57	267	107	21.24	107.72
4	Application of FYM/Compost @ 20 t/ha + 50% RDF (inorganic s.)	68.52	100.51	268	97.43	21.24	98.25
5	Application of FYM/Compost @ 20 t/ha +100% RDF (inorganic s.)	67.67	118.83	297	115.74	21.25	116.36
6	Appli.of FYM/Compost @ 20 t/ha +inorganic nutrient appli. based on Soil test	68.29	119.34	297	116.26	21.24	116.87
7	Application of FYM/Compost @ 10 t/ha + biofertilizer (Azoto./Aceto.+PSB) + 50% RDF	68.36	115.43	297	112.35	20.94	113.07
8	Application of FYM/Compost @ 10 t/ha + biofertilizer (Azoto./Aceto.+PSB) + 100% RDF	67.82	116.46	296	113.37	21.23	114.09
9	Application of FYM/Compost @ 10 t/ha + biofertilizer (Azoto./Aceto.+PSB) + Soil test based	67.59	115.74	297	113.17	21.23	113.48
	S Em ±	0.32	1.85	3.18	2.02	0.08	1.98
	CD at 5%	NS	5.54	9.26	6.05	NS	5.94

Project No. - AS 66

Title: Priming of cane node for accelerating germination.

Objectives: (1) To find out suitable cane node priming technique.

(2) To assess the effect of cane node on acceleration of germination.

Treatments: 06

T1: Un-primed cane node

T2: Treating cane node in hot water at 50⁰ C for 2 hr.

T3: Treating cane node in hot water (50⁰ C) + urea solution (3%) for 2 hr.

T4: priming cane node with cattle dung, cattle urine & water in 1:2:5 ratio

T5: Conventional 3 bud sett planting

T6: primed & sprouted cane node (Incubated for 4 days after priming).

Design: RBD

Replications: 04, **Planting date:** 16.12.2013

Plot size: 5.4 X 6 m² (6 rows at 90 cm spacing)

Variety: Co JN 86 – 600 **RDF -** 300:80:60 NPK/ha

Result:

Germination (%): The germination percentage was influenced significantly due to various treatments during experimentation. However, germination per cent was recorded significantly higher (67.34) in priming cane node with cattle dung, cattle urine & water in 1:2:5 ratio treatment as compared to Un-primed cane node (54.22), but increase in germination per cent did not differ significantly.

Tillers (000'/ha): The number of shoots increased significantly due to treatment of priming cane node with cattle dung, cattle urine & water in 1:2:5 ratio (110.34) as compared to Un-primed cane node (97.15). Except Un-primed cane node, other treatments showed beneficial effect on tillers.

Plant height (cm): The plant height increased significantly due to treatment of priming cane node with cattle dung, cattle urine & water in 1:2:5 ratio (265 cm) as compared to Un-primed cane node (247 cm).

Number of millable canes (NMC 000'/ha): The NMC influenced significantly due to treatment. Significantly higher NMC values recorded of priming cane node with cattle dung, cattle urine & water in 1:2:5 ratio (107.25) as compared to Un-primed cane node (93.90). The NMC recorded of priming cane node with cattle dung, cattle urine & water in 1:2:5 ratio (107.25) and Conventional 3 bud sett planting (103.24) was at par .

Brix (%): The value of brix per cent did not differ significantly due to various treatments during experimentation. The brix percentage ranged between 21.25 to 21.34 per cent.

Cane Yield (t/ha): The cane yield increased significantly due to treatment of priming cane node with cattle dung, cattle urine & water in 1:2:5 ratio (107.33 t/ha) as compared to Un-primed cane node (91.74 t/ha). but increase in cane yield did not differ significantly.

Summary: The germination percentage, cane yield and yield attributes increased significantly due to treatment of priming cane node with cattle dung, cattle urine & water in 1:2:5 ratio (67.34 %) than other treatments.

Table 4.(AS-66): Effect of different treatments on germination growth, yield and quality of sugarcane.

S.No	Treatments	Germination (%)	Tillers (000'/ha)	Height (cm)	NMC (000'/ha)	Brix (%)	Yield (t/ha)
1	Un-primed cane node	54.22	97.15	247	93.90	21.27	91.74
2	Treating cane node in hot water at 50 C for 2 hr.	56.33	103.09	250	100.00	21.27	99.38
3	Treat. cane node in hot water (50 C) urea solution (3%) for 2 hr.	58.75	103.47	258	100.39	21.25	100.54
4	priming cane node with cattle dung, cattle urine & water in 1:2:5 ratio	67.34	110.34	265	107.25	21.26	107.33
5	Conventional 3 bud sett planting	57.34	107.87	251	103.24	21.34	100.23
6	primed & sprouted cane node (Incubated for 4 days after priming)	55.31	101.16	249	98.07	21.34	97.53
S Em ±		1.74	2.06	1.69	2.16	0.03	1.81
CD at 5%		5.23	6.21	5.09	6.51	NS	5.45

Project No. - AS 65**Title: Enhancing Sugarcane productivity and profitability under wheat- Sugarcane cropping-system.**

Objective: (1) To enhance the Sugarcane productivity of Sugarcane under wheat -Sugarcane cropping system.

Treatments: 09

T1 : Autumn planted Sugarcane
T2: T1 + Wheat (1:2)
T3: T1 + Wheat (1:3)
T4: Wheat sown on 15 th Nov. -late Sugarcane
T5: Wheat sown on 15 th Dec. -late Sugarcane
T6: FIRB Sowing of Wheat 15 th Nov.(75 cm with 3 rows of wheat)+ S. in furrow in 3 rd week of Feb.)
T7: FIRB Sowing of Wheat 15 th Nov.(75 cm with 3 rows of wheat)+ S. in furrow in 3 rd week of March.)
T8: T6 with 15 th Dec. sowing of wheat
T9: T7 with 15 th Dec. sowing of wheat

Design: RBD **Replication:** 03 **Plot size:** 5.4 X 8 m² (6 rows at 90 cm spacing)

Date of Planting : As per treatments

Variety : Sugarcane (Co 99004), wheat (MP-1215)

Recommended dose of fertilizer: Sugarcane: NPK (300:80:60 kg/ ha)

Wheat: As per area occupied by the crop.

Date intercrop harvesting: Last week of April 2014.

Results:

The results showed that the significantly highest Sugarcane equivalent yield (103.87 t/ha) obtained with autumn planted Sugarcane + Wheat (1:2) followed by autumn planted Sugarcane + Wheat (1:3) (101.68 t/ha) intercropping systems. Among these treatment the equivalent yield recorded at par. The highest net return (Rs.59618/ha) and B:C ratio(1:1.35) was recorded under autumn planted Sugarcane + Wheat (1:2) intercropping systems followed by autumn planted Sugarcane + Wheat (1:3) (Rs.54791/ha.),Net return and(1: 1.32) B : C ratio intercropping system. The percent increase (9.89%) in sugarcane equivalent yield was also obtained higher with autumn planted Sugarcane + Wheat (1:2) intercropping system followed by autumn planted Sugarcane + Wheat (1:3) (7.57 %) intercropping system then sole sugarcane cropping system.

Table : 1 Effect of Sugarcane productivity and profitability under wheat-Sugarcane cropping system at Powarkheda

Treatments	Yield main crop (t / ha)	Yield Intercrop (t / ha)	Sugarcane equivalent yield (t/ ha)	Grass Monetary return (Rs./ ha)	Cost cultivation (Rs/ha)	Net Return (Rs /ha)	B : C Ratio	Increasing equivalent yield (%)
T ₁ : Autumn planted Sugarcane	94.52	-	94.52	207944	159990	47954	1.29	-
T ₂ : T ₁ + Wheat (1:2)	91.05	1.82	103.87	228518.6	168900	59618.64	1.35	9.89
T ₃ : T ₁ + Wheat (1:3)	86.88	2.1	101.68	223692	168900	54791.98	1.32	7.57
T ₄ : Wheat sown on 15 th Nov. -late Sugarcane	40.90	2.08	55.55	122209.1	168900	-46690.9	0.72	-41.22
T ₅ : Wheat sown on 15 th Dec. -late Sugarcane	40.43	2.06	54.95	120880.6	168900	-48019.4	0.71	-41.86
T ₆ : FIRB Sowing of Wheat 15 th Nov.(75 cm with 3 rows of wheat)+ S. in furrow in 3 rd week of Feb.)	83.20	2.1	98.00	215590	168900	46690.00	1.27	3.68
T ₇ : FIRB Sowing of Wheat 15 th Nov.(75 cm with 3 rows of wheat)+ S. in furrow in 3 rd week of March.)	74.46	2.26	90.38	198841.7	168900	29941.73	1.17	-4.38
T ₈ : T ₆ with 15 th Dec. sowing of wheat	81.49	2.28	97.55	214618	168900	45718.00	1.27	3.2
T ₉ : T ₇ with 15 th Dec. sowing of wheat	75.77	2.26	91.69	201727.5	168900	32827.53	1.19	-2.99
SEm +			1.86					
CD at 5 %			5.57					

Note : Sale price per quintal considered for sugarcane @ Rs. 220 /-, Wheat @ Rs. 1550/- and cost of inputs as per prevailing rates with market.