

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

ZARS/ Sugarcane /2014/286.....

Dated: 23.06.2014

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 2013-2014

Sir,

Please find enclosed herewith “Annual Progress Report” of AICRP on Sugarcane-Crop Production, ZARS, Powarkheda (M.P.) for the year 2013-2014. Submitted for your information and necessary action please.

Kindly acknowledge the receipt of the same.

With regards,

Yours faithfully

(O. Toppo)

ZARS/Sugarcane/2014 /

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 2013-2014

CROP PRODUCTION



***ALL INDIA COORDINATED RESEARCH PROJECT
ON SUGARCANE***



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

CONTAINTS

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**Standard Meteorological Week wise Weather data
Zonal Agricultural Research Station, Powarkheda 2013**

SMW	Temperature °C		Relative		Rainfall (mm)	Rainy days	PAN Evaporat
	Max.	Min.	Morning	Evening			
1	28.20	4.30	88.00	31.00	0.00	0.00	1.80
2	27.60	4.30	92.00	23.00	0.00	0.00	2.11
3	31.40	10.00	87.00	53.00	0.00	0.00	1.68
4	24.60	7.20	85.00	23.00	5.00	1.00	2.51
5	28.10	8.60	89.00	42.00	0.00	0.00	2.92
6	31.30	13.30	96.00	45.00	1.20	1.00	2.97
7	32.50	13.80	91.00	45.00	57.60	4.00	3.01
8	31.30	12.00	92.00	45.00	0.00	0.00	3.23
9	32.70	12.50	84.00	44.00	0.00	0.00	3.97
10	35.20	13.40	82.00	18.00	0.00	0.00	4.84
11	35.50	15.60	77.00	25.00	5.40	1.00	5.39
12	37.70	16.80	79.00	22.00	0.00	0.00	5.59
13	38.00	16.00	74.00	34.00	0.00	0.00	7.45
14	40.70	17.60	68.00	21.00	4.20	1.00	8.39
15	40.50	20.20	60.00	22.00	0.00	0.00	13.60
16	39.70	19.60	64.00	15.00	7.60	1.00	9.58
17	42.50	20.80	62.00	15.00	0.00	0.00	14.78
18	43.70	22.10	55.00	15.00	0.00	0.00	17.26
19	44.50	22.20	51.00	15.00	0.00	0.00	15.33
20	46.50	24.10	51.00	13.00	0.00	0.00	16.51
21	45.90	24.90	60.00	13.00	0.00	0.00	17.19
22	43.70	24.00	61.00	15.00	11.00	2.00	16.82
23	42.10	22.40	68.00	20.00	21.80	3.00	11.61
24	36.60	22.00	76.00	21.00	104.80	5.00	7.54
25	34.40	23.70	92.00	41.00	27.40	3.00	7.91
26	30.60	23.40	95.00	49.00	134.00	4.00	2.49
27	32.10	20.20	92.00	50.00	98.00	4.00	2.20
28	31.40	23.40	92.00	66.00	103.80	6.00	2.21
29	30.00	20.20	90.00	56.00	134.40	7.00	0.69
30	32.00	23.50	92.00	63.00	95.90	7.00	0.60
31	30.20	23.00	94.00	59.00	156.80	5.00	2.27
32	30.70	22.90	89.00	57.00	80.60	6.00	4.30
33	30.50	23.50	88.00	63.00	32.40	3.00	2.64
34	28.80	22.20	96.00	60.00	266.70	5.00	1.35
35	31.20	22.10	95.00	99.00	5.20	1.00	2.42
36	34.80	22.40	86.00	54.00	0.00	0.00	6.55
37	36.20	23.00	68.00	35.00	8.60	2.00	7.89
38	35.40	23.50	69.00	39.00	57.80	2.00	5.23
39	34.20	22.60	73.00	53.00	6.00	2.00	5.51
40	34.20	22.00	89.00	62.00	36.00	2.00	3.84
41	32.50	20.20	90.00	62.00	30.20	4.00	3.48
42	34.90	19.20	70.00	38.00	0.00	0.00	4.29
43	33.50	19.00	83.00	47.00	0.20	1.00	3.47
44	33.80	16.60	52.00	29.00	0.00	0.00	3.35
45	32.60	17.00	55.00	30.00	0.00	0.00	3.10
46	30.60	12.00	50.00	22.00	0.00	0.00	2.98
47	30.40	10.00	40.00	22.00	0.00	0.00	2.00
48	32.20	12.50	52.00	22.00	0.00	0.00	3.73
49	32.50	9.80	54.00	23.00	0.00	0.00	2.72
50	28.90	8.50	64.00	22.00	0.00	0.00	2.42
51	28.00	9.00	71.00	25.00	0.00	0.00	2.36
52	28.20	13.00	74.00	36.00	0.00	0.00	2.10
Total	46.50	4.30	75.90	36.90	1492.60	83.00	5.58

**ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE
ZONAL AGRICULTURAL RESEARCH STATION POWARKHEDA – 461 110 (M. P.)
ANNUAL PROGRESS REPORT (2013-14)**

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 per cent recommended dose of N (300:80:60)

2. 100 per cent recommended dose of N (300:80:60)

3. 125 per cent recommended dose of N (300:80:60)

Design: RBD

Replications: 03 **Planting date :** 13-12-2012

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

Soil health : Soil pH - 7.48, EC – 0.39 mmhos/cm, OC (%) - 0.60%, Available N – 235 kg/ha, P₂O₅ – 16.61 kg/ha and K₂O – 473 kg/ha

Results:

Germination (%): The germination percentage did not differ significantly. The germination percentage recorded higher with Co 06022(49.65%) than Co C 671(48.43%) and Co 06002 (48.26%). 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	49.65	79.45	252	73.04	21.37	72.08
2	Co 06002	48.26	68.00	234	64.22	21.33	63.31
3	Co C 671	48.43	71.36	236	66.66	21.85	65.16
	S Em +	0.91	2.10	2.01	1.81	0.01	2.11
	CD at 5%	NS	6.29	6.01	5.42	NS	6.32
Fertilizer dose (% Recommended N)							
1	75%	48.29	67.25	231	62.85	21.47	62.00
2	100%	48.52	74.96	243	70.05	21.53	68.49
3	125%	49.53	76.61	248	71.02	21.55	70.06
	S Em +	0.91	2.10	2.01	1.81	0.01	2.11
	CD at 5%	NS	6.29	6.01	5.42	NS	6.32

Tillers (000'/ha): Among varieties Co 06022 showed significantly higher number of tillers recorded with (79.45) than Co C 671 (71.36) and Co 06002 (68.00) . The tillers recorded in-between Co C 671 and Co 06002 were at par. Fertility levels showed significantly differences for tillers. The significantly higher number of tillers recorded with 125% recommended dose of N (76.61) as compared with 75% recommended dose of N (67.25). Both the levels of RDF N (100 and 125%) showed at par tillers but were significantly higher than the 75% RDF N.

Plant Height (cm): Among varieties Co 06022 showed significantly higher plant height (255 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 N and the differences were significantly higher than the plant height obtained due to application of 75% RDF N (231 cm). The plant height also increased significantly due to application of 100 % RDF N (243 cm) than 75% RDF N. Both the levels of RDF N(100 and 125%) showed at par plant height but were significantly higher than the 75% RDF N.

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 (73.04) as compared to Co C 671 (66.66) and Co 06002 (64.22). 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 (71.02) recorded with 125% RDF N than 75% RDF N (62.85). The NMC recorded in between 100% RDF N and 125% RDF N 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 (72.08 t/ha) than Co C 671 (65.16 t/ha) and Co 06002 (63.31 t/ha) but the cane yield obtained at par in between Co C 671 (65.16 t/ha) and Co 06002 (63.31 t/ha). Application of fertilizer doses increased cane yield correspondingly with the increase in fertilizer levels and significantly higher cane yield (70.06 t/ha) obtained due to application of 125 % RDF N than 75% RDF N (62.00 t/ha). The cane yield obtained at par in-between 100 and 125 % RDF N.

Summary:

Results revealed that among the early genotypes Co 06022 gave significantly higher cane yield of 72.08 t/ha than Co C 671 (65.16 t/ha) and Co 06002(63.31 t/ha). Application of 125 % RDF N gave significantly higher cane yield of (70.06 t/ha) than 75 % RDF N (62.00 t/ha) but increase in cane yield was at par in-between 100 and 125% RDF N.

Project No. - AS 42 (B)

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

Objective: To workout 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 N
- ii. 100% Recommended dose of N
- iii. 125% Recommended dose of N

Design: RBD,

Replication: 03 **Planting date:** 18.12.2012

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

Soil health : Soil pH - 7.48, EC – 0.39 mmhos/cm, OC (%) - 0.60%, Available N – 235 kg/ha, P₂O₅ – 16.61 kg/ha and K₂O – 473 kg/ha

Results:

Germination (%): The germination percentage did not differ significantly due to varieties or fertility levels. However, germination percentage ranged from 51.85 to 53.93 percent for varieties and 52.62 to 53.21 percent for fertility levels.

Tillers (000'/ha): Among varieties Co 06010 recorded higher numbers of tillers (94.47) than Co JN 86-600 (77.50) . Application of fertilizer levels recorded higher number of tillers. Significantly higher number of tillers obtained at 125% RDF N (89.45) and 100% RDF N (86.34) as compared to number of tillers recorded with 75% RDF N (80.81). Number of tillers recorded at par in between 100 and 125% recommended dose of N.

Plant height (cm): Among varieties Co 06010 showed significantly higher plant height (224 cm) as compared to Co 06015 (210 cm), Co 06027 (211 cm) and Co JN 86-600 (210 cm).The plant height recorded in between Co 06015, Co 06027 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 (244 cm) due to application of 125% RDF N than 100% RDF N (211 cm) and 75% RDF N (187 cm).

Brix (%): The brix values did not differ significantly either due to varieties or fertility levels. However, among varieties the brix value ranged from 21.21 to 22.16 for varieties and 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	52.66	94.47	224	86.66	22.13	87.58
2	Co 06015	53.06	88.61	210	79.73	22.16	80.90
3	Co 06027	51.85	81.54	211	73.56	22.15	73.46
4	Co JN 86-600	53.93	77.50	210	67.07	21.21	66.91
	S Em +	1.84	2.06	4.03	1.86	0.01	1.75
	CD at 5%	NS	6.01	10.80	5.45	NS	5.12
Fertilizer dose (% Recommended N)							
1	75%	52.62	80.81	187	71.81	21.91	72.35
2	100%	53.21	86.34	211	77.78	21.91	78.27
3	125%	52.80	89.45	244	80.68	21.91	81.02
	S Em +	1.84	2.06	4.03	1.86	0.01	1.75
	CD at 5%	NS	6.01	10.80	5.45	NS	5.12

Number of Millable Canes (NMC '000'/ha): Among varieties the NMC population recorded significantly higher with Co 06010 (86.66) as compared to Co 06015 (79.73), Co 06027 (73.56) and Co JN 86-600 (67.07),. The NMC increased significantly due to application of fertilizer levels. Significantly higher NMC (80.68) recorded with 125% RDF N than 75% RDF N (71.81). The NMC values recorded with 100 and 125% RDF N was at par.

Cane yield (t/ha): The cane yield was influenced significantly due to different varieties. However, among varieties Co 06010 recorded significantly higher cane yield of (87.58 t/ha) than Co 06015 (80.90 t/ha), Co 06027 (73.46 t/ha) and Co JN 86-600 (66.91 t/ha). Application of fertilizer doses increased cane yield with the increase in fertilizer levels. The cane yield was significantly higher with 125% RDF N (81.02 t/ha). Than 75% RDF N (72.35 t/ha). The cane yield recorded with 100 and 125% RDF N was at par.

Summary: Results revealed that among the mid late genotypes Co 06010 gave significantly higher cane yield of (87.58 t/ha) than Co 06015 (80.90 t/ha), Co 06027 (73.46 t/ha) and Co JN 86-600 (66.91 t/ha). Application of 125 % RDF N gave significantly higher cane yield ((81.02 t/ha) than 75 % RDF N (72.35 t/ha) but increase in cane yield was at par in-between 100 and 125% RDF N.

Project No. - AS 64

Title: Response of sugarcane crop to different plant nutrients in varied agro-ecological situations.

Objective: To study differential response of sugarcane crop to different nutrients.

Treatments: 13

1.	Control(no fertilizer)	8.	NPK+ Mn
2.	N	9.	NPK+S+Zn
3.	NP	10.	NPK+ S+Zn+Fe
4.	NPK	11.	NPK+S+Zn+Fe+Mn
5.	NPK+S	12.	Soil test based fertilizer application
6.	NPK+Zn	13.	FYM @ 20 t/ha
7.	NPK+ Fe		

Design: RBD

Replications: 03, **Planting date:** 20.12.2012

Plot size: 5.4 X 8 m² (6 rows at 90 cm spacing)

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

Soil Fertility status:

S.No.	Properties	Value
1.	Available N	235 kg/ha
2.	Available P ₂ O ₅	16.61 kg/ha
3.	Available K ₂ O	473 kg/ha
4.	S	16 kg/ha
5.	Zn	0.58 ppm
6.	Fe	6.36
7.	pH	7.48
8.	EC	0.39 mmhos/cm
9.	OC (%)	0.60 %
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 54.09 to 57.95 per cent among treatments.

Tillers (000'/ha): The number of tillers increased significantly due to application of all plant nutrients and there was beneficial effect observed in increasing the number of tillers either with the application of the alone plant nutrients or in combination with major plant nutrients. The number of tillers increased significantly due to application of N alone (63.04), NP

(64.35), NPK (64.36), FYM (64.51) and highest number of tillers recorded in NPK+S+Zn+Fe+Mn (69.06) than control plot (51.08). However, number of tillers values recorded in combination of N, NP, NPK and other micro nutrients was at par.

Plant height (cm): The plant height increased significantly due to application of all plant nutrient treatments than control (145 cm). The significant increase in plant height was more apparent due to application of N alone (202 cm), NP (221 cm), FYM (257 cm) than control plots (145 cm) and plant height recorded at par among all plant nutrient treatments.

Number of millable canes (NMC 000'/ha): the NMC influenced significantly due to application of nutrients either alone or in combination with NPK. Significantly higher NMC values recorded at N alone (59.34), NP (59.57), NPK (59.57) than control (46.45). The application of NPK showed significantly higher values of NMC than the application of N, NP and FYM but was at par in between an N and FYM. Application of micronutrients with NPK although showed higher values of NMC but increase in NMC did not differ significantly.

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 plant nutrients either alone or in combination with NPK. The increase in cane yield was recorded higher with application of N alone (65.74 t/ha), NP (75.31 t/ha), NPK (82.87 t/ha) and FYM (67.28 t/ha) than control (42.82 t/ha). Application of all micronutrients with NPK although showed increase in cane yield but increase in yield did not differ significantly.

Summary: The cane yield and yield attributes increased significantly due to application of major plant nutrients viz. N, NP and NPK than control (without fertilizers). Application of micronutrients with NPK although showed beneficial effects on crop growth and yield of the crop but increase in cane yield did not differ significantly.

Table 5.(AS-64): 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	Control	56.10	51.08	145.00	46.45	21.13	42.82
2	N	55.17	63.04	202.00	59.34	21.24	65.74
3	NP	54.55	64.35	221.67	59.57	21.24	75.31
4	NPK	56.56	64.36	259.67	59.57	21.24	82.87
5	NPK+S	56.02	65.59	273.67	60.80	21.25	84.41
6	NPK+Zn	54.32	66.36	274.33	61.57	21.24	85.49
7	NPK+Fe	57.10	66.67	274.67	61.88	20.94	86.19
8	NPK+Mn	54.71	66.90	275.33	62.11	21.23	86.19
9	NPK+S+Zn	54.09	67.13	275.67	62.27	21.23	88.35
10	NPK+S+Zn+Fe	56.56	68.13	276.67	63.35	21.22	88.81
11	NPK+S+Zn+Fe+Mn	54.71	69.06	277.00	64.35	21.22	88.73
12	Soil test based	57.95	66.44	275.33	61.73	21.22	84.72
13	FYM @ 20 t/ha	57.56	64.51	257.33	59.03	21.22	67.28
S Em ±		4.67	2.25	2.48	2.26	0.05	1.83
CD at 5%		NS	6.55	7.23	6.58	NS	5.32

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: 10.01.2013

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 (59.92) in priming cane node with cattle dung, cattle urine & water in 1:2:5 ratio treatment as compared to Un-primed cane node (46.72), 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 (91.36) as compared to Un-primed cane node (78.63). 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 (248 cm). Increase in height were at par in between Treating cane node in hot water (50⁰ C) + urea solution (3%) for 2 hr. (260 cm) and priming cane node with cattle dung, cattle urine & water in 1:2:5 ratio (265 cm) treatments.

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 (87.35) as compared to Un-primed cane node (74.07). but increase in NMC did not differ significantly.

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 (86.73 t/ha) as compared to Un-primed cane node (70.68 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 (59.92%) 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	46.72	78.63	248	74.07	21.27	70.68
2	Treating cane node in hot water at 50 C for 2 hr.	48.91	84.57	250	77.16	21.27	76.62
3	Treat. cane node in hot water (50 C) urea solution (3%) for 2 hr.	51.33	85.34	260	78.94	21.25	78.32
4	priming cane node with cattle dung, cattle urine & water in 1:2:5 ratio	59.92	91.36	265	87.35	21.26	86.73
5	Conventional 3 bud sett planting	49.06	88.58	246	80.86	21.34	80.25
6	primed & sprouted cane node (Incubated for 4 days after priming)	47.81	82.64	249	74.61	21.34	74.61
S Em ±		1.67	2.03	2.08	1.77	0.03	1.68
CD at 5%		5.04	6.12	6.26	5.32	NS	5.06

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 2013.

Results:

The results showed that the Sugarcane equivalent yield increased significantly higher in intercropping systems except autumn planted Sugarcane + Wheat (1:2) and autumn planted Sugarcane + Wheat (1:3) than sole Sugarcane cropping system. The significantly highest Sugarcane equivalent yield (98.59 t/ha) obtain with autumn planted Sugarcane + Wheat (1:2) followed by autumn planted Sugarcane + Wheat (1:3) (96.42 t/ha) intercropping systems. Among these treatment the equivalent yield recorded at par. Treatment T4,T5,T7 and T9 yield reduced due to late planting of Sugarcane. The highest net return (Rs.48014/ha) and B:C ratio(1:1.28) was recorded under autumn planted Sugarcane + Wheat (1:2) intercropping systems followed by autumn planted Sugarcane + Wheat (1:3) (Rs.43246/ha.),Net return and(1: 1.25) B : C ratio intercropping system. The percent increase (10.33%) 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) (7.91 %) 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 Monitory return (Rs./ ha)	Cost cultivation (Rs/ha)	Net Return (Rs /ha)	B : C Ratio	Increasing equivalent yield (%)
T ₁ : Autumn planted Sugarcane	89.35	-	89.35	196570	159969	36601	1.22	-
T ₂ : T ₁ + Wheat (1:2)	86.47	1.72	98.59	216894	168880	48014	1.28	10.33
T ₃ : T ₁ + Wheat (1:3)	82.33	2.00	96.42	212126	168880	43246	1.25	7.91
T ₄ : Wheat sown on 15 th Nov. -late Sugarcane	57.48	1.98	71.79	157938	168880	-10942	0.93	-19.65
T ₅ : Wheat sown on 15 th Dec. -late Sugarcane	54.80	1.96	68.61	150940	168880	-17940	0.89	-23.21
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.)	77.84	2.18	93.20	205038	168880	36158	1.21	4.30
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.)	71.90	2.16	87.12	191660	168880	22780	1.13	-2.49
T ₈ : T ₆ with 15 th Dec. sowing of wheat	76.35	2.18	91.71	201760	168880	32880	1.19	2.64
T ₉ : T ₇ with 15 th Dec. sowing of wheat	73.45	2.16	88.67	195070	168880	26190	1.15	-0.76
SEm +			1.85					
CD at 5 %			5.56					

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