AGRICULTURAL RESEARCH STATION
UMMEDGANJ, KOTA

(Maharana Pratap University of Agriculture & Technology, Udaipur)

Dr. Pramod Dashora
PROFESSOR & P.I.
(Agronomy)

Ph : 0744-2844369 (O)
Fax : 0744-2844306
Mob. 8107279509

Office Address : Ummedganj Farm,
Post Box No. 7,
G.P.O. Nayapura,
Kaithoon Road,
KOTA - 324 001

No. Date : 24.04.2013

dr.oksinha_2007@yahoo.co.in

To,

Dr. O.K. Sinha
Project coordinator
All India Coordinated Research Project on sugarcane
IISR,
Lucknow

Sub : Report of 2012-13, AICRP on Sugarcane (Agronomy and FLD), Kota centre – reg.

Respected Sir,

Kindly find enclosed herewith report of AICRP on Sugarcane (Agronomy and FLD), Kota centre for the year 2012-13. The report on crop improvement will be submitted after 30th of this month.

This is for your kind information & further necessary action.

Thanking you

Yours faithfully

Encl. As above.

(Pramod Dashora)

CROP PRODUCTION

(Report Year 2012-2013)

Expt. No. AS 42 /Sugarcane/Agronomy/Kota/2011-12/Spring -1

1	**Name of the Project**	:	AICRP on Sugarcane
2	**Location**	:	Agriculture Research Station, Kota
3	**Title of Experiment**	:	Agronomic Evaluation of Promising Sugarcane Genotypes
4	**Year of start**	:	2012-13 (with change of genotypes)
5	**Brief description of the experiment**		
(i)	**Objective**	:	To work out agronomy of sugarcane varieties from advanced varietal trial (AVT)
(ii)	**Treatment**	:	
	1. Varieties	:	V_1 – CO-06033 V_2 – COLK-7201 V_3 – CoH-6247 V_4 – CoPK-05191(C)
	2. Fertilizer levels	:	F_1 - 75% of the recommended dose of NPK (150:45:30) F_2 - 100% of the recommended dose of NPK (200:60:40) F_3 - 125% of the recommended dose of NPK (250:75:50)
(iii)	**Design**	:	Factorial, R. B. D. (3 x 3)
(iv)	**Replication**	:	3
(v)	**Plot size**	:	6 x 5.4 m^2
(vi)	**Weed Control**	:	Spray of Atrazine @ 2.0 kg a. i./ha as PE followed by one hand weeding at 60 DAP
(vii)	**Fertilizer**	:	Application of the recommended dose of N, P& K (200:60:60 Kg/ha.) as per treatment. Half dose of N and full dose of P&K applied at the time of planting and remaining dose of N applied in two splits within in 90 DAP.
(viii)	**Date of Planting**	:	**2012-13** 10.03.2012
(ix)	**Date of Harvesting**	:	**2012-13** 15.02.2013

6. Physico-chemical properties of experimental soil :

The data in Table –AS 42.1 showed that soil of experimental trial was clay loam in texture, alkaline in reaction, (1.42 mg/m^3). The soil was medium in available phosphorus and high in available nitrogen and potassium during both the years.

Table: AS 42.1 Physico- chemical properties of the experimental field.

Parameters	Value
Textural class	Clay loam
Bulk density (mg/m^3)	1.44
Particle density (mg/m^3)	2.66
Porosity (%)	48.0
Soil pH (1:2.5)	8.0
Organic carbon (%)	0.55
available N (Kg/ha)	355.0
available $P_2 O_5$ (Kg/ha)	23.6
available K_2O (Kg/ha)	287.0

7. Results :

The experiment consisted of 4 genotypes viz; CO-06033, COLK-7201, CoH-6247 and CoPK-05191(c) and three fertility levels viz; F_1 - 75% of the recommended dose of NPK (150:45:.5), 100% of the recommended dose of NPK (200:60:40) and 125% of the recommended dose of NPK (250:75:50). A perusal of data (42.2) showed that among genotypes CoH-6247 recorded significantly higher tiller count than other genotypes. Cane length was higher than check variety CoPK-05191 and at par with CoLK-7201. Similarly CoH-6247 reduced the highest cane yield (81.21 t/ha) and millable canes and found significantly superior to variety COLK-7201, whereas at par with COPK-05191 and CO-06033. Sucrose content and CCS (%) showed significant difference among different genotypes being higher in COPK-05191 followed by COH-6247, CoLK-7201 and CO-06033.

The fertility levels significantly influenced tiller count , millable cane and cane yield. However, the response was obtained up to 100% of recommended level of fertilizer. Cane quality remained unaffected under different fertility levels. Interaction between genotypes and fertility levels were found non significant.

8. Summary: Among genotypes COH-6247 being at par with COPK-05191 and CO-06033 produced higher cane yield of 81.11 t/ha. However, COPK-05191, in addition to giving a very good yield (79.25 t/ha) also maintained its superiority over other genotype in terms of cane quality. Yield did not improved significantly beyond recommended dose of fertilizer in different genotypes.

9. Significant findings: This is the first year of the experiment

10. Scientist attached: Dr. P. Dashora

Table : AS 42.2 : Effect of genotypes and fertility levels on yield attributes, yield and quality of the sugarcane during 2012-13.

Treatment	Germination (%)	Tillers (000/ha)	Cane length (cm)	Millable cane (000ha)	Single cane weight (g)	Cane yield (t/ha)	Pol % in juice	CCS (%)	CCS yield (t/ha)
Varieties									
CO-06033	39.11	126.3	213.3	104.2	791	76.75	17.12	11.44	8.78
COLK-7201	36.25	114.9	176.8	83.3	815	69.25	16.42	11.06	7.66
CoH-6247	39.66	151.0	207.2	105.4	816	81.11	16.30	10.87	8.82
CoPK-05191(c)	35.55	131.4	181.0	99.6	838	79.25	19.24	13.29	10.53
CD at 5%	NS	16.2	9.9	9.3	NS	8.6	0.71	0.60	1.86
Fertility levels									
75 % RDF	35.85	120.0	193.6	88.4	827	70.27	17.07	11.49	8.07
100 RDF	38.22	130.6	192.8	100.5	839	78.92	17.31	11.70	9.23
125 RDF	38.80	142.0	197.4	105.4	824	80.63	17.43	11.80	9.51
CD at 5%	NS	14.1	NS	8.0	NS	7.40	NS	NS	NS

Expt. No. AS 62 /Sugarcane/Agronomy/Kota/2011-12/Spring -3

1	**Name of the Project**	:	AICRP on Sugarcane
2	**Location**	:	Agriculture Research Station, Kota
3	**Title of Experiment**	:	Management of binding weeds in sugarcane
4	**Year of start**	:	Spring 2009-10
5	**Brief description of the experiment**		
(i)	**Objective**	:	To control binding weeds/ creepers in sugarcane
(iii)	**Design**	:	R.B.D.
(iv)	**Variety**	:	Co – 1148
(v)	**Replication**	:	Three
(vi)	**Plot size**	:	6m x 4.5 sqm
(vii)	**Weed Control**	:	As per treatments
(viii)	**Fertilizer**	:	Recommended dose of fertilizer (NPK 200:60:60)
(ix)	**Date of Planting**	:	5.3.2009; 3.3.2010; 14.3.2011
(x)	**Date of Harvesting**	:	10.2.2010; 8.2.2011; 28.2.2012

(ii) **Treatment** :

T1 – Control (weedy check)
T2 – Hoeing at 30, 60 and 90 DAP
T3 – Atrazine @ 2 kg a.i./ha (PE) followed by 2,4D (1 kg a.i./ha) at 60 DAP
T4 - Atrazine @ 2 kg a.i./ha after 1st irrigation and hoeing followed by 2,4-D @ 1 kg a.i./ha at 75 DAP
T5 – Metribuzine @ 1.25 kg a.i./ha (PE) followed by 2,4-D @ 1.0 kg a.i./ha at 75 DAP
T6 – Atrazine @ 2.0 kg a.i./ha (PE) +Almix 20 g/ha at 75 DAP
T7 – Metribuzine @ 1.25 kg a.i./ha (PE) + Almix 20 g/ha at 75 DAP
T8 – Atrazine @ 2.0 kg a.i./ha (PE) + Ethoxysulfuron 50 g.i. at 75 DAP
T9 – Atrazne @ 2.0 kg a.i./ha (PE) + Dicamba 350 g.i. at 75 DAP
T10 - Metribuzine @ 1.25 kg a.i./ha (PE) + Dicamba 350 g.i. at 75 DAP

6. Physico-chemical properties of experimental soil:

The data in Table- As 62.1 showed that soil of experimental trial was clay loam in texture, alkaline in reaction. The soil was medium in available phosphorus and high in available nitrogen and potassium and deficient in zinc.

Table – AS –62.1 : Physico- chemical properties of the experimental field.

Parameters	Value
Textural class	Clay loam
Bulk density (mg/m^3)	1.48
Particle density (mg/m^3)	2.63
Porosity (%)	46.8
Soil pH (1:2.5)	7.8
Available N (Kg/ha)	365
Available $P_2 O_5$ (Kg/ha)	23.0
Available K_2O (Kg/ha)	280
Available Zn (DTPA)	0.550

7. Results :

The experiment was planted on 5.3.2009, 3.3.2010 & 14.3.2011 and harvested 10.2.2010, 8.2.2011 & 28.2.2012. Crop was fertilized with 200 kg N, 60 kg P_2O_5 and 60 kg K_2O/ha. The dominant field bind weed species noted in the experimental plot was *Convolvulus Arvensis* L. and weeds were Cynadon *Dactylon*, *Cyprus Rotendus*, *Digera Arvensis*, *Echinochloa Crusgalli* and *Euphorbia Hirta*. Weed management practices tried in experiment caused significant reduction in weed density and weed dry matter at both the stages (60 & 120 DAP) of crop growth. Amongst various weed control techniques, pooloed analysis whowed that the minimum wed intensity and dry weight of weeds in 1 sqm area were (36.2 weeds /sqm and 365.65 g/sqm) observed in T2 (Hoeing at 30, 60 and 90 DAP) this treatment laso received maximum weed control efficiency (85.15) which is closely followed by T9 (Atrazne @ 2.0 kg a.i./ha (PE) + Dicamba 350 g.i. at 75 DAP) and T10 (Metribuzine @ 1.25 kg a.i./ha (PE) + Dicamba 350 g.i. at 75 DAP) t.

All the weed management treatments significantly increased the number of tillers, millable canes, cane and sugar yield over weedy check (T1). However, the variation in these weed control treatments on their effect on yield and yield attributes has been associated with about similar variation in weed control. Higher can yield was recorded under manual hoeing T2 (Hoeing at 30, 60 and 90 DAP) closely followed by T9 (Atrazne @ 2.0 kg a.i./ha (PE) + Dicamba 350 g.i. at 75 DAP) and T4 (Atrazine @ 2 kg a.i./ha after 1st irrigation and hoeing followed by 2,4-D @ 1 kg a.i./ha at 75 DAP).

8. Summary: Hoeing at 30, 60 & 90 DAP registered highest cane yield which is at par with T9 (Atrazne @ 2.0 kg a.i./ha (PE) + Dicamba 350 g.i. at 75 DAP).

9. Significant findings : Hoeing at 30, 60 & 90 DAP registered highest cane yield which is at par with T9 (Atrazne @ 2.0 kg a.i./ha (PE) + Dicamba 350 g.i. at 75 DAP).

10. Scientist attached: Dr. P. Dashora

Table 62.2 : Effect of binding weeds on weed density, weed dry matter and weed control efficiency in sugarcane in 3 consecutive years (2009-10, 2010-11 and 2011-12)

Treatment	Weed density (No .of weeds/sqm)				Weed dry weight (g/sqm)				Weed control efficiency			
	2009-10	2010-11	2011-12	Pooled	2009-10	2010-11	2011-12	Pooled	2009-10	2010-11	2011-12	Mean
T1 – Control (weedy check)	325.50	287.5	312.5	308.5	282.65	168.2	275.3	242.05	-	-	-	-
T2 – Hoeing at 30, 60 and 90 DAP	32.9	41.00	34.8	36.2	36.65	31.7	38.6	35.65	80.87	85.73	88.86	85.15
T3 – Atrazine @ 2 kg a.i./ha (PE) followed by 2,4D (1 kg a.i./ha) at 60 DA	89.6	65.00	82.7	79.1	73.65	67.05	71.2	74.46	72.47	77.39	73.53	74.46
T4 - Atrazine @ 2 kg a.i./ha after 1st irrigation and hoeing followed by 2,4-D @ 1 kg a.i./ha at 75 DAP	47.9	58.51	55.8	54.07	73.75	43.05	68.9	61.90	72.15	79.64	82.14	77.97
T5 – Metribuzine @ 1.25 kg a.i./ha (PE) followed by 2,4-D @ 1.0 kg a.i./ha at 75 DAP	162.7	157.50	158.3	159.5	95.4	101.60	102.5	99.83	50.01	45.21	49.34	48.18
T6 – Atrazine @ 2.0 kg a.i./ha (PE) +Almix 20 g/ha at 75 DAP	135.40	128.00	134.5	132.63	145.35	113.25	148.6	135.73	58.40	55.47	56.96	56.94
T7 – Metribuzine @ 1.25 kg a.i./ha (PE) + Almix 20 g/ha at 75 DAP	117.50	115.50	120.3	117.76	142.65	102.05	140.3	128.33	63.90	59.82	61.50	61.74
T8 – Atrazine @ 2.0 kg a.i./ha (PE) + Ethoxysulfuron 50 g.i. at 75 DAP	138.9	80.05	130.6	116.51	171.45	113.45	168.5	151.13	57.30	72.16	58.21	62.55
T9 – Atrazne @ 2.0 kg a.i./ha (PE) + Dicamba 350 g.i. at 75 DAP	66.5	46.21	62.5	58.46	82.3	62.95	86.2	77.15	79.60	83.93	80.00	81.17
T10 - Metribuzine @ 1.25 kg a.i./ha (PE) + Dicamba 350 g.i. at 75 DAP	69.2	47.23	63.6	60.01	71.2	56.45	70.8	66.15	78.70	83.57	79.64	80.63
CD at 5%	111.56	115.76	113.86	125.37	90.25	81.67	83.5	87.9				

Table 62.3 : Effect of binding weeds on germination (%), tillers (000/ha) and NMC (000/ha) in sugarcane during 3 consecutive years (2009-10, 2010-11 and 2011-12)

Treatment	Germination (%)			Tillers (000/ha)				NMC (000/ha)			
	2009-10	2010-11	2011-12	2009-10	2010-11	2011-12	Pooled	2009-10	2010-11	2011-12	Pooled
T1 – Control (weedy check)	49.3	40.2	37.6	96	117.3	120.6	111.3	65	88.0	87.3	80.1
T2 – Hoeing at 30, 60 and 90 DAP	53.4	38.3	34.3	156	148.8	152.3	152.40	102	102.0	110.5	104.8
T3 – Atrazine @ 2 kg a.i./ha (PE) followed by 2,4D (1 kg a.i./ha) at 60 DA	54.1	40.5	38.5	143	167.7	163.5	158.4	97	117.0	118.3	110.8
T4 - Atrazine @ 2 kg a.i./ha after 1st irrigation and hoeing followed by 2,4-D @ 1 kg a.i./ha at 75 DAP	55.5	36.7	33.7	155	135.2	145.2	145.1	95	92.7	93.3	93.7
T5 – Metribuzine @ 1.25 kg a.i./ha (PE) followed by 2,4-D @ 1.0 kg a.i./ha at 75 DAP	53.3	38.7	36.7	115	149.0	125.8	129.9	96	102.3	101.2	99.8
T6 – Atrazine @ 2.0 kg a.i./ha (PE) +Almix 20 g/ha at 75 DAP	50.8	39.7	34.5	150	158.1	156.7	154.9	98	108.4	106.4	104.3
T7 – Metribuzine @ 1.25 kg a.i./ha (PE) + Almix 20 g/ha at 75 DAP	50.3	36.9	32.7	155	140.0	154.2	149.7	102	95.8	99.3	99.0
T8 – Atrazine @ 2.0 kg a.i./ha (PE) + Ethoxysulfuron 50 g.i. at 75 DAP	54.1	38.4	39.7	134	145.0	142.3	140.4	94	99.4	95.2	96.2
T9 – Atrazne @ 2.0 kg a.i./ha (PE) + Dicamba 350 g.i. at 75 DAP	54.0	40.0	37.8	125	176.4	172.8	158.1	95	128.4	121.5	114.9
T10 - Metribuzine @ 1.25 kg a.i./ha (PE) + Dicamba 350 g.i. at 75 DAP	52.7	37.6	37.4	130	143.3	145.3	139.5	95	97.1	99.5	97.2
CD at 5%	NS	NS	NS	29.54	30.3	33.4	32.8	15.75	20.2	25.7	24.2

Table 62.4 : Effect of binding weeds on cane yield (t/ha), CCS (t/ha) and B:C ratio in sugarcane during 3 consecutive years (2009-10, 2010-11 and 2011-12)

Treatment	Cane yield (t/ha)				CCS (t/ha)				B:C ratio
	2009-10	2010-11	2011-12	Pooled	2009-10	2010-11	2011-12	Pooled	
T1 – Control (weedy check)	55.1	50.8	54.9	53.6	10.40	7.1	7.5	8.3	2.30
T2 – Hoeing at 30, 60 and 90 DAP	76.1	65.7	74.2	72.0	10.47	8.8	8.2	9.1	2.55
T3 – Atrazine @ 2 kg a.i./ha (PE) followed by 2,4D (1 kg a.i./ha) at 60 DA	72.1	76.9	73.5	74.2	10.58	9.8	10.3	10.2	2.48
T4 - Atrazine @ 2 kg a.i./ha after 1st irrigation and hoeing followed by 2,4-D @ 1 kg a.i./ha at 75 DAP	73.9	56.7	65.8	65.5	10.68	8.1	9.2	9.3	2.37
T5 – Metribuzine @ 1.25 kg a.i./ha (PE) followed by 2,4-D @ 1.0 kg a.i./ha at 75 DAP	60.8	64.6	70.2	65.2	10.40	8.4	8.3	9.0	2.43
T6 – Atrazine @ 2.0 kg a.i./ha (PE) +Almix 20 g/ha at 75 DAP	68.1	68.5	66.3	67.6	10.74	9.1	8.8	9.5	2.42
T7 – Metribuzine @ 1.25 kg a.i./ha (PE) + Almix 20 g/ha at 75 DAP	69.4	58.6	62.8	63.6	10.98	8.1	9.2	9.4	2.37
T8 – Atrazine @ 2.0 kg a.i./ha (PE) + Ethoxysulfuron 50 g.i. at 75 DAP	67.5	62.6	66.5	65.5	10.66	8.5	9.5	9.6	2.45
T9 – Atrazne @ 2.0 kg a.i./ha (PE) + Dicamba 350 g.i. at 75 DAP	75.5	79.7	82.5	79.2	10.86	10.5	10.4	9.4	2.58
T10 - Metribuzine @ 1.25 kg a.i./ha (PE) + Dicamba 350 g.i. at 75 DAP	72.6	599.8	60.3	64.2	10.88	8.2	9.2	9.4	2.38
CD at 5%	6.92	11.8	12.8	9.2	NS	1.23	1.65	1.2	

Expt. No. AS 64 /Sugarcane/Agronomy/Kota/2012-13/Spring -4

1	**Name of the Project**	:	AICRP on Sugarcane
2	**Location**	:	Agriculture Research Station, Kota
3	**Title of Experiment**	:	Response of sugarcane crop to different plant nutrients in varied agro ecological situations.
4	**Year of start**	:	Spring 20-11-12

5 **Brief description of the experiment**

(i)	**Objective**	:	To study differential response of sugarcane crop to different nutrients
(iii)	**Design**	:	R.B.D.
(iv)	**Variety**	:	
(v)	**Replication**	:	Three
(vi)	**Plot size**	:	6 x 4.5 sqm
(vii)	**Weed Control**	:	As per treatments
(viii)	**Fertilizer**	:	Recommended dose of fertilizer (NPK 200:60:40)
(ix)	**Date of Planting**	:	5.3.2011, 10.03.2012
(x)	**Date of Harvesting**	:	15.2.2012, 16.02.2013

(ii) **Treatment** :

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

Note : FYM should be applied @ 20 t/ha as common to all treatments
S : 40/60 kg/ha-elemental sulphur (subtropical)
Zn : 2/50 kg ZnSO4/ha (subtropical)
Fe : 5/20 kg FeSO4/ha (subtropical)
Mn: 5/20 kg MnSO4/ha (subtropical)
NPK : as per recommendations

6. Physico-chemical properties of experimental soil:

The data in Table- AS 64.1 showed that soil of experimental trial was clay loam in texture, alkaline in reaction. The soil was medium in available phosphorus and high in available nitrogen and potassium and deficient in zinc.

Table – AS –64.1 : Physico- chemical properties of the experimental field.

Parameters	Value
Textural class	Clay loam
Bulk density (mg/m^3)	1.42
Particle density (mg/m^3)	2.65
Porosity (%)	46.0
Soil pH (1:2.5)	8.2
Organic carbon	0.54
Available N (Kg/ha)	362
Available $P_2 O_5$ (Kg/ha)	22.5
Available K_2O (Kg/ha)	283
Available Zn (DTPA)	0.546
Available S (ppm)	9.6
Available Fe (DTPA)	13.24
Available Mn (ppm) DTPA	20.78

7. Results :

During 2011-12 (table 64.2), the experiment was planted on March 5, 2011 and harvest on 15.2.2012. The crop was uniformly fertilized with 20 t FYM/ha. The results indicated germination (%) was almost equal in all the treatments (varied from 34.4 to 41.5 %) . the observation recorded on tiller count at 120 and 180 DAP reveals that significantly difference was observed under all treatment over control. The T7 treatment having high tiller count (167.2 and 160.0 000/ha) over absolute control (147.7 and 134.2 000/ha) respectively.

Treatment applied with different nutrient combinations significantly enhance yield attributing characters via; cane length, cane girth and number of millable canes over absolute control. The highest cane length, cane girth and number of millable canes (225.9 cm, 9.8 cm & 126.8 000/ha) respectively were observed in T9 treatment combination and lowest was recorded in absolute control (134.2cm, 7.0 cm and 108 000/ha) which ultimately increased significantly cane yield with respect to T9 treatment combination over T1 treatment.

During 2012-13 (table 64.3) sugarcane variety COPK 05191 was planted on March 10, 2012 keeping three budded 4 sets per meter row length. The crop was harvested on Feb. 20, 2013 , germination percentage of sugarcane crop was recorded highest (49.2 %) in T9, which was significantly higher over rest of the treatments except T_{10} and T_{11} treatment at 35 DAP stage of the crop growth. Tiller population was also significantly higher in T9 which was superior over rest of the treatment at 80 and 120 DAP stage of the crop growth, except T10 and T11 at stages of crop growth. Lowest tiller population was recorded in control at 801 and 120 DAP crop growth stage. Cane yield was recorded highest (95.38 t/ha) in T9 treatment which was at par with treatment T5, T6, T7, T8, T10 and T11 and significantly higher than rest of the treatments. The higher cane yield in these treatments was due to higher cane length, cane girth and NMC/ha. CCS yield was highest in T9 (13.46 t/ha) which was significantly higher over T1, T2, T3, T4, T121 and T13 treatments and at par with rest of the treatments

8. Summary: Application of NPK+Zn +S (200+60+40+40+25 kg/ha) was found suitable increasing cane yield and gave higher yield which was significantly superior to control, N, NP, NPK and soil test based fertilizer application

9. Significant findings : Application of NPK+Zn +S (200+60+40+40+25 kg/ha) was found suitable increasing cane yield and gave higher yield which was significantly superior to control, N, NP, NPK and soil test based fertilizer application

11. **Scientist attached**: Dr. P. Dashora

Table 64.2 : Effect of different plant nutrients of sugarcane with respect to yield attributing , yield and quality during (2011-12)

Treatment	Germination (%) at 35 DAP	Tillers population (000/ha)		Cane length (cm)	NMC (000/ha)	Cane girth (cm)	Cane yield (t/ha)	CCS (%)	CCS (t/ha)
		80 DAP	120 DAP						
T1 – Control (No fertilizer)	34.4	134.2	147.7	185.7	108.9	7.0	50.67	11.94	6.04
T2 – N	37.3	149.8	159.2	198.1	118.4	8.4	67.00	12.86	8.60
T3 – NP	37.6	152.8	163.7	204.2	118.7	8.5	72.00	12.15	8.74
T4 - NPK	37.0	154.9	161.5	212.0	122.5	9.5	77.67	12.26	9.52
T5 – NPK+S	38.7	154.2	162.1	211.3	120.2	9.6	78.30	12.92	10.12
T6 – NPK+Zn	38.8	149.9	158.4	205.9	117.3	9.3	78.67	13.17	10.78
T7 – NPK+Fe	38.4	160.0	167.2	223.0	121.5	9.8	77.33	13.45	10.40
T8 – NPK+Mn	39.5	153.2	165.3	202.2	118.3	9.6	73.00	12.83	9.36
T9 – NPK+S+Zn	37.6	149.6	158.2	225.9	126.8	9.8	82.46	11.60	9.56
T10 - NPK+S+Zn+Fe	41.5	149.4	159.1	201.1	113.4	9.1	78.45	12.13	9.51
T11 - NPK+S+Zn+Fe+Mn	37.2	159.2	165.2	223.2	107.8	9.5	81.33	11.92	9.69
T12 - Soil test based fertilizer application	39.6	153.2	155.2	214.2	116.3	9.4	75.00	12.55	9.41
CD at 5%	NS	14.7	10.24	13.2	8.7	0.8	16.08	0.95	2.68

Table 64.3 : Effect of different plant nutrients of sugarcane with respect to yield attributing , yield and quality during (2012-13)

Treatment	Germination (%) at 35 DAP	Tillers population (000/ha)		Cane length (cm)	NMC (000/ha)	Cane girth (cm)	Cane yield (t/ha)	CCS (%)	CCS (t/ha)
		80 DAP	120 DAP						
T1 – Control (No fertilizer)	33.9	107.1	127.2	172.8	99.6	8.1	58.4	12.53	7.32
T2 – N	42.1	130.5	141.8	207.4	110.1	9.7	75.1	13.5	10.12
T3 – NP	42.6	136.4	150.7	215.5	111.6	9.8	79.8	12.75	10.17
T4 - NPK	42.5	136.6	152.4	221.0	113.7	10.9	80.4	12.87	10.26
T5 – NPK+S	44.5	139.3	156.6	222.3	115.6	11.0	87.3	13.56	11.83
T6 – NPK+Zn	45.3	147.2	174.8	223.1	114.2	10.7	88.9	13.82	10.27
T7 – NPK+Fe	43.7	144.5	168.1	221.3	116.2	11.3	88.3	12.18	10.75
T8 – NPK+Mn	43.8	138.4	156.0	226.5	112.1	11.0	81.8	13.47	11.01
T9 – NPK+S+Zn	49.2	165.9	187.8	244.6	124.2	11.3	95.3	14.18	13.46
T10 - NPK+S+Zn+Fe	47.5	163.6	184.6	225.6	116.6	10.5	91.6	12.73	11.51
T11 - NPK+S+Zn+Fe+Mn	48.2	161.8	180.4	234.6	111.6	10.9	91.6	12.51	11.46
T12 - Soil test based fertilizer application	40.4	143.5	163.2	207.1	106.2	10.6	79.4	13.17	10.46
T13- FYM @ 20 t/ha	35.6	138.8	158.6	180.8	103.5	8.7	74.8	12.62	9.43
CD at 5%	4.6	14.7	10.24	44.4	17.0	0.9	15.5	1.12	2.90

Expt. No. AS 66 /Sugarcane/Agronomy/Kota/2012-13/Spring -5

1	**Name of the Project**	:	AICRP on Sugarcane
2	**Location**	:	Agriculture Research Station, Kota
3	**Title of Experiment**	:	Priming of cane node for accelerating germination
4	**Year of start**	:	Spring 2012-13

5 **Brief description of the experiment**

(i) **Objective** : 1. To find out suitable cane mode priming technique
2. To assess the effect of cane node on acceleration of germination

(iii)	**Design**	:	R.B.D.
(iv)	**Variety**	:	COPK 05191
(v)	**Replication**	:	Three
(vi)	**Plot size**	:	6 x 4.5 sqm
(vii)	**Weed Control**	:	As per treatments
(viii)	**Fertilizer**	:	Recommended dose of fertilizer (NPK 200:60:40)
(ix)	**Date of Planting**	:	15.03.2012
(x)	**Date of Harvesting**	:	17.02.2013

(ii) **Treatment** :

T1 : Un-primed cane node
T2 : Treating cane node in hot water at 50^0C for 2 hours
T3 : Treating cane node in hot water at (50^0C) 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-bed 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).

6. Physico-chemical properties of experimental soil:

The data in Table- AS 66 showed that soil of experimental trial was clay loam in texture, alkaline in reaction. The soil was medium in available phosphorus and high in available nitrogen and potassium and deficient in zinc.

Table – AS –66.1 : Physico- chemical properties of the experimental field.

Parameters	Value
Textural class	Clay loam
Bulk density (mg/m^3)	1.42
Particle density (mg/m^3)	2.65
Porosity (%)	46.0
Soil pH (1:2.5)	8.2
Organic carbon	0.54
Available N (Kg/ha)	362
Available $P_2 O_5$ (Kg/ha)	22.5
Available K_2O (Kg/ha)	283
Available Zn (DTPA)	0.546
Available S (ppm)	9.6
Available Fe (DTPA)	13.24
Available Mn (ppm) DTPA	20.78

7. Results :

The experiment with COPK 0519 was carried out on March 15, 2012 at 75 cm row distance. Recommended dose of fertilizer to each treatment. Different priming techniques significantly affect the germination at 20 and 30 DAP except 10 DAP crop growth stage. The germination % was receded highest in T4 (43.6 %) over rest of the treatment, except T6 treatment at 30 DAP. Shoot population was also higher in T4 treatment which was superior over rest of the treatment at 90-120 and 150 DAP stage of the crop growth. Non significantly difference was observed at 60 DAP stage of the crop growth. Cane yield recorded highest (76.80 t/ha) in T4 which was at par with T6 and significantly higher over other treatments. The highest cane yield in these treatments was due to higher cane length, cane girth and NMC/ha. CCS yield was highest in T4 treatment (10.06 t/ha) which was significantly higher over T1 and at par with T2, T3, T5 and T6.

8. Summary: Priming cane node with cattle dung, cattle urine and water in 1:2:5 ratio was found suitable for increasing cane yield. Which was significantly superior over un-primed cane conventional, one bud set planting treatments. Cane node in hot water in 50^0C for 2 hours and Treating cane node in hot water at (50^0C) urea solution (3%) for 2 hours.

9. Significant findings :

10. Scientist attached: Dr. P. Dashora

Table 66.2 : Effect of Priming of cane node for accelerating the sugarcane production during 2012-13.

Treatment	Germination (%)			Tillers (000 ha)				Cane length (cm)	Cane girth (cm)	NMC (000 ha)	CCS (%)	Yield (t/ha)	CCS (t/ha)
	10 DAP	20 DAP	30 DAP	60DAP	90 DAP	120 DAP	150 DAP						
T1 :	7.1	23.1	33.7	17.08	53.20	86.66	90.33	2.92	8.39	52.57	12.9	69.37	6.78
T2 :	6.4	26.4	35.2	18.13	57.37	90.22	95.17	2.98	8.39	69.06	13.3	71.33	9.18
T3 :	7.4	27.2	36.2	17.50	59.59	87.46	91.81	3.05	8.61	70.08	13.3	74.07	9.32
T4 :	7.8	37.9	43.6	20.75	52.75	94.08	100.32	3.32	8.83	76.80	13.1	88.62	10.06
T5 :	7.5	31.2	33.7	19.28	57.91	91.19	96.11	2.90	8.40	63.20	13.2	70.26	8.34
*T6 :	7.6	34.5	42.9	21.73	60.22	94.44	100.86	3.26	8.79	76.26	13.0	86.03	9.91
CD at 5%	NS	8.5	5.5	NS	3.19	3.69	5.19	0.12	0.12	3.19	NS	6.8	3.1

T1 : Un-primed cane node
T2 : Treating cane node in hot water at 50^0C for 2 hours
T3 : Treating cane node in hot water at (50^0C) 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-bed 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).

FRONT LINE DEMONSTRATION (FLD) 2012-13

TECHNICAL REPORT OF THE FRONTLINE DEMONSTRATIONS OF SUGARCANE CONDUCTED BY AICRP ON SUGARCANE, KOTA CENTRE (2012-13)

1.	Name of the crop	:	Sugarcane
2.	Season	:	Spring (2012-13)
3.	Objective	:	Sustainable development of sugarcane based cropping system
4.	Name of the farmer	:	Sh. Gopal Lal S/o. Hira Lal
5.	location	:	NTPA Road Barkheda Anta Distt. Baran
6.	Area under demonstration	:	One hectare
7.	Irrigated / rainfed	:	Irrigated
8.	Category of beneficence		
	(a) Medium / small / marginal	:	Medium
	(b) SC/ST/OBC/General	:	OBC
9.	Rainfall pattern	:	Medium
10.	Field condition		
	(a) Topography	:	Plains
11.	Production technology adopted	:	
	(a) Variety	:	CoPK-05191
	(b) Seed rate	:	75 q/ha
	(c) Source of seed	:	ARS, Ummedganj, Kota.
	(d) Seed treatment	:	With 0.25% Agal + 0.1 Bavistin
	(e) Planting date	:	25.3.2012
	(f) Fertilizer		
	(i) Basal	:	200 N : 60 P_2O_5 : 60 K_2O ha^{-1}
	(ii) Top dressing in two splits	:	100 kg N
	(h) Weed control	:	Herbicidal (Atrazine @ 2.0 kg a.i. ha-1) + One hand weeding at 60 DAP
	(i) Plant protection measures	:	Monocrotophos @ 1.25 lit./ha
12.	Date of harvesting	:	10.3.2013

13. Estimate of yield (t/ha) :
(i) Demonstration plot : 92.86 t/ha
(ii) Traditional plot : 80.72 t/ha
(iii) Per cent increase over local check : 11.50 %

14. Economics

S. No.	Items	Cost estimate (Rs.) Demonstration Plot	Traditional method
1.	Human labour	14652	16687
2.	Bullock / tractor	3960	4620
3.	Inputs		
	Seed	15000	13125
	Weedicide	900	
	Manure		
	Fertilization	2480	1850
	Plant Protection	500	
4.	Irrigation	6950	6950
5.	Total cost of cultivation (Rs./ha)	45556	42336
6.	Value of product (Rs./ha)	147380	127889
7.	Net return (Rs./ha)	101824	85553

* Selling price Rs. 1500 t/ha

15. Farmers reaction :

Farmers were quite satisfactory and impressed cane production. They had following observation:

1. Sowing of three budded sets gave netter and uniform germination over two or three piece of whole cane.
2. Sowing of sets if furrows with recommended spacing gave better plant population as compared to local ones.
3. Use of recommended varieties for the zone reduced the seed cost
4. Balanced fertilization of nutrients also reduced the input cost.
5. Use of seed treatment minimizes the disease infection
6. Use of herbicides for weed control reduce the total cost of cultivation
7. Control of shoot borer with prescribed insecticide at proper stage proved of assistance.

TECHNICAL REPORT OF THE FRONTLINE DEMONSTRATIONS OF SUGARCANE CONDUCTED BY AICRP ON SUGARCANE, KOTA CENTRE (2012-13)

1.	Name of the crop	:	Sugarcane
2.	Season	:	Spring (2012-13)
3.	Objective	:	Sustainable development of sugarcane based cropping system
4.	Name of the farmer	:	Sh. Ashok Chaudhary
5.	location	:	Village – K. Patan P.S. – Bundi Taluka – Bundi District – Bundi
6.	Area under demonstration	:	One hectare
7.	Irrigated / rainfed	:	Irrigated
8.	Category of beneficence		
	(a) Medium / small / marginal	:	Medium
	(b) SC/ST/OBC/General	:	OBC
9.	Rainfall pattern	:	Medium
10.	Field condition		
	(a) Topography	:	Plains
11.	Production technology adopted	:	
	(a) Variety	:	CoPK 05191
	(b) Seed rate	:	75 q/ha
	(c) Source of seed	:	ARS, Ummedganj, Kota.
	(d) Seed treatment	:	With 0.25% Agal + 0.1 Bavistin
	(e) Planting date	:	15.3.2012
	(f) Fertilizer		
	(i) Basal	:	100 N : 60 P_2O_5 : 60 K_2O ha^{-1}
	(ii) Top dressing in two splits	:	100 kg N
	(h) Weed control	:	Herbicidal (Atrazine @ 2.0 kg a.i. ha-1) + One hand weeding at 60 DAP
	(i) Plant protection measures	:	there was an incident of shoot borer at early stage in May for control spray of monocrotophos @ 1.25 lit./ha.

12. Date of harvesting : 10.3.2013

13. Estimate of yield (t/ha) :
(i) Demonstration plot : 92.4 t/ha
(ii) Traditional plot : 77.8 t/ha
(iii) Per cent increase over local check : 18.77 %

14. Economics

S. No.	**Items**	**Cost estimate (Rs.) Demonstration Plot**	**Traditional method**
1.	Human labour	14652	16687
2.	Bullock / tractor	3960	4620
3.	Inputs		
	Seed	15000	13125
	Weedicide	900	
	Manure		
	Fertilization	2480	2035
	Plant Protection	500	
4.	Irrigation	6950	6950
5.	Total cost of cultivation (Rs./ha)	43942	43417
6.	Value of product (Rs./ha)	138600	116700
7.	Net return (Rs./ha)	94658	73283

* Selling price Rs. 1500 t/ha

15. Farmers reaction :

Farmers were quite satisfactory and impressed cane production. They had following observation:

1. piece of whole cane.
2. Balanced fertilization of nutrients also reduced the input cost.
3. Sowing of sets if furrows with recommended spacing gave better plant population as compared to local ones.
4. Sowing of three budded sets gave netter and uniform germination over two or three Use of herbicides for weed control reduce the total cost of cultivation
5. Use of recommended varieties for the zone reduced the seed cost
6. Use of seed treatment minimizes the disease infection
7. Control of shoot borer with prescribed insecticide at proper stage proved of assistance.

15. Weather Parameters :

Daily Rainfall and Evaporation data - Jan. 2012 to June 2012

Date	Rainfall (mm)						Evaporation (mm)					
	Jan.	Feb.	March	April	May	June	Jan.	Feb.	March	April	May	June
1	2.0							1.9	3.9	6.6	11.7	12.4
2								2.0	4.2	7.3	8.9	13.0
3								2.4	3.6	7.1	8.1	12.7
4								3.1	3.6	6.3	6.1	12.7
5						6.2	2.5	3.3	4.8	5.2	4.5	11.9
6							2.1	3.6	6.6	7.0	6.5	11.8
7						3.8	1.6	2.1	4.7	8.4	7.9	7.3
8					12.6	5.2	1.6	2.0	3.7	8.5	7.4	7.3
9							1.5	2.4	4.0	7.8	5.4	8.0
10							2.7	2.7	4.8	10.0	5.4	7.0
11							1.7	3.1	3.6	7.0	6.3	10.4
12				4.0			2.2	2.7	3.9	6.3	7.2	7.8
13				1.5			2.2	2.8	4.4	6.0	8.6	8.8
14							1.8	2.5	4.8	5.6	7.2	6.3
15							2.1	2.2	5.3	4.9	8.1	8.3
16						20.2	2.1	2.2	3.8	7.3	9.1	7.2
17							2.0	2.4	4.0	7.3	11.9	6.8
18							2.1	2.9	7.6	5.3	9.2	8.3
19						1.6	1.6	2.2	6.2	6.3	13.3	7.7
20							1.9	2.2	7.5	7.1	10.3	7.0
21							2.1	2.4	7.1	6.3	9.0	6.2
22							2.2	2.8	5.8	5.0	11.3	-
23							1.8	2.9	6.8	4.8	9.3	9.4
24							2.1	2.6	8.9	7.6	7.6	10.9
25							1.7	3.1	6.4	9.2	12.3	11.2
26							1.9	2.5	6.2	4.8	15.1	12.2
27							1.6	3.1	5.6	6.2	12.6	12.0
28							1.8	4.1	7.4	8.0	10.0	10.2
29							1.8	3.4	5.6	9.3	10.3	10.77
30					30.4		1.9		5.3	9.8	10.5	10.2
31							1.9		6.9		12.5	

Daily Rainfall and Evaporation data - July 2012 to Dec. 2012

Date	Rainfall (mm)						Evaporation (mm)					
	July	Aug.	Sept.	Oct.	Nov.	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		14.0	58.4				8.8	3.9	3.3	5.2	2.8	3.1
2							8.4	3.3	3.9	4.8	1.9	2.2
3							8.9	3.4	3.3	4.2	4.6	3.1
4			4.6				8.5	4.7	1.9	4.5	2.7	2.7
5	32.2		4.4				8.4	4.5	2.2	4.2	3.2	2.4
6	39.2						6.9	4.6	3.9	5.3	2.6	2.1
7	14.5		34.0				-	3.5	1.8	5.0	3.1	2.1
8		20.0	2.6				4.7	4.7	1.9	4.6	2.9	1.9
9	4.0	4.6					3.9	-	4.5	4.5	3.0	2.8
10	12.4	80.0					3.7	-	4.7	4.5	2.5	2.6
11	13.0	22.6	7.5				4.6	2.6	4.6	4.6	2.9	2.3
12		90.4	9.8				3.7	-	2.8	4.4	3.9	2.7
13	1.0	2.0	15.0				4.1	2.5	2.1	4.6	2.5	2.1
14	2.6	4.5					3.6	2.4	3.2	4.4	2.9	-
15		8.0					5.2	-	4.1	3.5	2.8	-
16		53.4	3.4				6.5	1.7	2.1	2.8	3.0	3.0
17							7.3	2.5	3.3	3.4	2.7	2.9
18	16.6						-	5.4	3.2	3.4	2.6	1.9
19							5.5	3.9	3.8	3.6	3.0	3.2
20							5.8	3.0	4.2	1.8	3.0	2.1
21							6.2	2.3	3.3	4.0	2.8	2.9
22	17.8	28.8					6.0	3.0	3.8	3.2	2.6	2.3
23							2.1	3.3	3.6	3.0	2.6	2.8
24							5.3	4.7	4.1	3.4	2.0	2.2
25							4.0	2.4	4.1	3.7	2.6	2.1
26		9.2					4.4	2.6	3.5	3.4	2.6	1.9
27		40.4					4.3	1.8	4.4	3.8	3.1	2.4
28	1.0	1.0					4.0	4.0	4.7	3.6	2.6	2.0
29	13.8						3.8	4.8	5.2	4.0	2.5	2.2
30	2.0						2.1	2.4	5.0	3.1	2.4	1.8
31	5.0									3.2		1.6