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

ZARS/ Sugarcane /2016/ 64… **Dated: 26 .07.2016**

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 2015-2016

Sir,

Please find enclosed herewith "Annual Progress Report" of AICRP on Sugarcane-Crop Production, ZARS, Powarkheda (M.P.) for the year 2015-2016. Submitted for your information and necessary action please.

Kindly acknowledge the receipt of the same.

With regards,

Yours faithfully

(O. Toppo)

ZARS/Sugarcane/2016 / …….. **Dated: 26-07-2016**

C.C. to,

1. **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
2015-2016

CROP PRODUCTION

ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE

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

CONTENTS

Standard Meteorological week wise weather data
Zonal Agricultural Research Station pawarkheda- 2015

	SMW	Max.Temp. (C.)	Min. Temp (C.)	RH% (Mor.)	RH % (Eve.)	Rain Fall (mm)	Rainy days
1 to 7/1	1 (Jan)	23.70	6.00	88.00	24.00	24.10	2.00
8 to 14/1	2 (Jan)	27.80	4.60	88.00	17.00	0.00	**0.00**
15 to 21/1	3 (Jan)	26.00	4.90	77.00	25.00	0.00	**0.00**
22 to 28/1	4 (Jan Feb)	27.50	8.80	88.00	25.00	0.40	0.00
29/1 to 4/2	5 (Feb)	30.70	5.60	92.00	20.00	7.00	1.00
5 to 11/2	6 (Feb)	30.70	11.20	86.00	20.00	12.40	1.00
12 to 18/2	7 (Feb)	30.80	8.60	89.00	19.00	0.00	**0.00**
19 to 25/2	8 (Feb)	33.80	11.40	79.00	18.00	0.00	**0.00**
26/2 to 4/3	9 (March)	32.80	13.20	75.00	19.00	23.60	2.00
5 to 11/3	10 (March)	32.50	12.00	77.00	19.00	167.50	1.00
12 to 18/3	11(March)	32.50	13.40	70.00	17.00	4.30	1.00
19 to 25/3	12 (March)	38.30	14.80	68.00	15.00	0.00	**0.00**
26/3 to 1/4	13 (March)	37.80	17.00	99.00	7.00	0.00	**0.00**
2 to 8/4	14 (April)	37.10	18.10	61.00	16.00	0.00	**0.00**
9 to 15/4	15 (April)	37.50	18.10	99.00	18.00	1.00	0.00
16 to 22/4	16 (April)	41.20	18.30	99.00	11.00	0.50	0.00
23 to 29/4	17 (April)	41.80	20.50	46.00	8.00	0.00	1.00
30/4 to 6/5	18 (May)	41.10	21.10	44.00	8.00	0.00	0.00
7 to 13/5	19 (May)	42.50	23.60	85.00	8.00	0.00	0.00
14 to 20/5	20 (May)	44.90	24.40	86.00	8.00	0.00	0.00
21 to 27/5	21 (May)	43.10	26.50	61.00	10.00	0.00	0.00
28/5 to 3/6	22 (May)	43.60	26.70	50.00	11.00	0.00	0.00
4 to 10/6	23 (June)	41.20	26.00	86.00	13.00	0.00	0.00
11 to 17/6	24 (June)	37.20	24.00	99.00	35.00	4.50	1.00
18 to 24/6	25 (June)	37.10	22.80	99.00	39.00	14.00	4.00
25/6 to 1/7	26 (June)	35.60	24.60	99.00	48.00	15.50	2.00
2 to 8/7	27 (July)	35.40	25.60	99.00	38.00	0.00	0.00
9 to 15/7	28 (July)	35.40	24.80	99.00	59.00	12.00	1.00
16 to 22/7	29 (July)	33.40	23.00	99.00	75.00	173.00	3.00
23 to 29/7	30 (July)	30.40	22.50	99.00	87.00	18.00	6.00
30/7 to 5/8	31 (Aug)	30.60	23.00	99.00	99.00	12.50	0.00
6 to 12/8	32 (Aug)	31.70	24.20	99.00	99.00	13.00	0.00
13 to 19/8	33 (Aug)	31.10	23.60	99.00	99.00	13.00	0.00
20 to 26/8	34 (Aug)	32.30	23.30	99.00	89.00	11.50	0.00
27/8 to 2/9	35 (Aug)	31.10	23.80	99.00	87.00	12.20	1.00
3 to 9/9	36 (Sept)	34.70	21.70	85.71	88.00	0.00	0.00
10 to 16/9	37 (Sept)	36.30	22.00	80.14	78.00	2.00	0.00
17 to 23/9	38 (Sept)	33.50	22.00	80.29	98.00	35.60	1.00

24 to 30/9	39 (Sept)	35.80	19.00	77.14	78.00	0.00	0.00
1 to 7/10	40 (Oct)	37.20	18.60	68.14	34.00	0.00	0.00
8 to 14/10	41 (Oct)	37.70	18.20	61.86	24.00	0.00	0.00
15 to 21/10	42 (Oct)	37.60	18.40	64.29	23.00	0.00	0.00
22 to 28/10	43 (Oct)	37.10	19.00	73.86	22.00	0.00	0.00
29/10 to 4/11	44 (Nov)	33.80	15.40	79.71	88.00	5.20	1.00
5 to 11/11	45 (Nov)	35.20	16.00	76.43	66.00	0.00	0.00
12 to 18/11	46 (Nov)	34.20	15.20	72.86	43.00	0.00	0.00
19 to 25/11	47 (Nov)	32.70	13.20	66.43	20.00	0.00	0.00
26/11 to 2/12	48 (Nov)	33.70	14.00	64.43	19.00	0.00	0.00
3 to 9/12	49 (Dec)	32.00	9.80	64.43	19.00	0.00	0.00
10 to 16/12	50 (Dec)	31.90	7.30	56.43	24.00	0.00	0.00
17 to 23/12	51 (Dec)	30.00	8.20	57.86	23.00	0.00	0.00
24 to 31/12	52 (Dec)	30.70	8.00	66.29	25.00	0.00	0.00

ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE
ZONAL AGRICULTURAL RESEARCH STATION POWARKHEDA – 461 110 (M. P.)
ANNUAL PROGRESS REPORT (2015-16)

CROP PRODUCTION

Project No. - AS 42 (A)

Title - Agronomic evaluation of new promising genotypes of ratoon 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

Plot Size: 5.4 x 6.0 m^2 (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, P_2O_5 – 16.63 kg/ha and K_2O – 475 kg/ha

Results:

Tillers (000'/ha): Among varieties Co 06022 showed significantly higher number of tillers which recorded (98.01) than Co C 671 (92.76) and Co 06002 (90.57). 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 (96.71) as compared with 75% recommended dose of NPK (88.75). 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.

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

S. No.	Treatments	Tillers (000'/ha)	Plant Height (cm)	NMC (000'/ha)	Brix (%)	Cane Yield (t/ha)
	Genotypes					
1	Co 06022	**98.01**	**252**	**91.56**	**21.37**	**98.87**
2	Co 06002	**90.57**	**234**	**81.28**	**21.33**	**88.61**
3	Co C 671	**92.76**	**236**	**85.94**	**21.85**	**93.20**
	S Em +	**2.09**	**2.54**	**1.79**	**0.17**	**1.74**
	CD at 5%	**6.26**	**7.61**	**5.36**	**NS**	**5.20**
	Fertilizer dose (% Recommended NPK)					
1	75%	**88.75**	**231**	**82.34**	**21.48**	**89.74**
2	100%	**95.88**	**243**	**87.93**	**21.52**	**95.06**
3	125%	**96.71**	**248**	**88.51**	**21.55**	**95.88**
	S Em +	**2.09**	**2.54**	**1.79**	**0.17**	**1.74**
	CD at 5%	**6.26**	**7.61**	**5.36**	**NS**	**5.20**

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 (91.56) as compared to Co C 671 (85.94) and Co 06002 (81.28). 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 (88.51) recorded with 125% RDF NPK than 75% RDF NPK (82.34). 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 21.48 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 ratoon 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 NPK
  ii. 100% Recommended dose of NPK
  iii. 125% Recommended dose of NPK

Design: RBD,

Replication: 03

Plot size: 5.4 X 6.0 m^2 (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, P_2O_5 – 16.63 kg/ha and K_2O – 475 kg/ha

Results:

Tillers (000'/ha): Among varieties Co 06027 recorded higher numbers of tillers (114.20) than Co JN 86-600 (99.04), but the tillers obtained at par in between Co 06027 (114.20) and Co 06010 (110.29), Co 06015 (99.07) and Co JN 86- 600 (99.04). Application of fertilizer levels recorded significantly higher number of tillers obtained at 125% RDF NPK (108.08) and 100% RDF NPK (107.38) as compared to number of tillers recorded with 75% RDF NPK (101.49). Number of tillers recorded were at par in between 100 and 125% recommended dose of NPK.

Plant height (cm): Among varieties Co 06027 showed higher plant height (248 cm) as compared to Co 06010 (247 cm), Co 06015 (242 cm) and Co JN 86-600 (242 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 (251 cm) due to

application of 125% RDF NPK than 75% RDF NPK (232 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 ratoon sugarcane genotypes at Powarkheda

S. No.	Treatments	Tillers (000'/ha)	Plant Height (cm)	NMC (000'/ha)	Brix (%)	Cane Yield (t/ha)
	Genotypes					
1	Co 06010	**110.29**	**247**	**107.07**	**22.13**	**103.88**
2	Co 06015	**99.07**	**242**	**95.95**	**22.15**	**93.18**
3	Co 06027	**114.20**	**248**	**111.11**	**22.14**	**107.72**
4	Co JN 86-600	**99.04**	**242**	**95.99**	**21.20**	**93.45**
	S Em +	**1.81**	**3.68**	**1.76**	**0.01**	**1.83**
	CD at 5%	**5.28**	**10.78**	**5.15**	**NS**	**5.35**
	Fertilizer dose (% Recommended NPK)					
1	75% RDF	**101.49**	**232**	**98.30**	**21.90**	**95.70**
2	100% RDF	**107.38**	**250**	**104.32**	**21.91**	**101.21**
3	125% RDF	**108.08**	**251**	**104.96**	**21.91**	**101.75**
	S Em +	**1.81**	**3.68**	**1.76**	**0.01**	**1.83**
	CD at 5%	**5.28**	**10.78**	**5.15**	**NS**	**5.35**

Number of Millable Canes (NMC '000'/ha): Among varieties the NMC population recorded significantly higher with Co 06027 (111.11) as compared to Co 06015 (95.95), and Co JN 86-600 (95.99), but the NMC obtained at par in between Co 06027 (111.11) and Co 06010 (107.07). The NMC increased significantly due to application of fertilizer levels. Significantly higher NMC (104.96) recorded with 125% RDF NPK than 75% RDF NPK (98.30). 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 (107.72 t/ha) than Co 06015 (93.18 t/ha) and Co JN 86-600 (93.45 t/ha), but the cane yield obtained at par in between Co 06027 (107.72 t/ha) and Co 06010 (103.88 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 (101.75 t/ha) than 75% RDF NPK (95.70 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 (107.72 t/ha) than Co 06015 (93.18 t/ha), and Co JN 86-600 (93.45 t/ha), but the cane yield obtained at par in between Co 06027 (107.72 t/ha) and Co 06010 (103.88 t/ha). Application of 125 % RDF NPK gave significantly higher cane yield (101.75 t/ha) than 75 % RDF NPK (95.70 t/ha) but increase in cane yield was at par in-between 100 and 125% RDF NPK.

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 :** 22-12-2014

Plot Size: 5.4 x 6.0 m^2 (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, P_2O_5 – 16.63 kg/ha and K_2O – 475 kg/ha

Results: The Experiment failed due to wild boar damage.

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 NPK
  ii. 100% Recommended dose of NPK
  iii. 125% Recommended dose of NPK

Design: RBD,

Replication: 03 **Planting date:** 24.12.2014

Plot size: 5.4 X 6.0 m^2 (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, P_2O_5 – 16.63 kg/ha and K_2O – 475 kg/ha

Results: The Experiment failed due to wild boar damage.

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: 09

T1. Application of trash at 10 t/ha + 50% RDF

T2. Application of trash at 10 t/ha + 100% RDF

T3. Application of trash at 10 t/ha +Soil test basis (NPK application)

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 (NPK)

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 (NPK application)

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

Plot Size: 5.4 x 6.0 m^2 (6 rows at 90 cm spacing)

Varieties : Co JN 86-600

Soil Fertility status:

S.No.	Properties	Value
1.	Available N	237 kg/ha
2.	Available P_2O_5	16.63 kg/ha
3.	Available K_2O	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:

Tillers (000'/ha): The number of tillers increased significantly due to application of FYM/Compost @ 20 t/ha +inorganic nutrient based on Soil test (113.48) as compared to application of trash 10 t/ha + 50% RDF (74.69), FYM/Compost @ 20 t/ha + 50% RDF (95.88), trash 10 t/ha + 100% RDF (103.70) and trash 10 t/ha + Soil test base (NPK appli.) (104.12).The number of tillers obtained at par in between T_6 (FYM/Compost @ 20 t/ha + Soil test basis (NPK), T_5 (FYM/Compost @ 20 t/ha + 100% RDF), T_9 (FYM/Compost @ 10 t/ha + biofertilizer + Soil test basis (NPK), T_8 (FYM/Compost @ 10 t/ha+ biofertilizer + 100% RDF), and T_7 (FYM/Compost @ 10 t/ha+ biofertilizer + 50% RDF).

Plant height (cm): The plant height increased significantly due to application of FYM/Compost @ 20 t/ha +inorganic nutrient based on Soil test (251) as compared to trash 10 t/ha + 50% RDF (221), FYM/Compost @ 20 t/ha + 50% RDF (232), trash 10 t/ha + 100% RDF (235), and trash 10 t/ha + Soil test basis (NPK appli.) (244). The plant height obtained at par in between T_7 (FYM/Compost @ 10 t/ha+ biofertilizer + 50% RDF), T_5 (FYM/Compost @ 20 t/ha +100% RDF), T_6 (FYM/Compost @ 20 t/ha + Soil test basis (NPK), T_8 (FYM/Compost @ 10 t/ha+ biofertilizer + 100% RDF) and T_9 (FYM/Compost @ 10 t/ha + biofertilizer + Soil test basis (NPK).

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 (111.32) as compared to application of trash 10 t/ha + 50% RDF (72.22), FYM/Compost @ 20 t/ha + 50% RDF (94.44), trash 10 t/ha + 100% RDF (101.23) and trash

10 t/ha + Soil test base (NPK appli.) (102.16). The number of millable canes obtained at par in between T_7 (FYM/Compost @ 10 t/ha+ biofertilizer + 50% RDF), T_8 (FYM/Compost @ 10 t/ha+ biofertilizer + 100% RDF), T_5 (FYM/Compost @ 20 t/ha +100% RDF), T_6 (FYM/Compost @ 20 t/ha + Soil test basis (NPK), and T_9 (FYM/Compost @ 10 t/ha + biofertilizer + Soil test basis (NPK).

.**Brix (%):** The value of brix per cent did not differ significantly due to various treatments during experimentation. The brix percentage ranged between 21.27 to 21.90 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 (101.85 t/ha) as compared to application of trash 10 t/ha + 50% RDF (68.62), FYM/Compost @ 20 t/ha + 50% RDF (85.29), trash 10 t/ha + 100% RDF (91.67) and trash 10 t/ha + Soil test base (NPK appli.) (92.59). The cane yield obtained at par in between T_7 (FYM/Compost @ 10 t/ha+ biofertilizer + 50% RDF), T_8 (FYM/Compost @ 10 t/ha+ biofertilizer + 100% RDF), T_9 (FYM/Compost @ 10 t/ha + biofertilizer + Soil test basis (NPK), T_6 (FYM/Compost @ 20 t/ha + Soil test basis (NPK), and T_5 (FYM/Compost @ 20 t/ha +100% RDF).

Summary: The cane yield increased significantly due to application of FYM/Compost @ 20 t/ha +inorganic nutrient based on Soil test (101.85 t/ha) as compared to application of trash 10 t/ha + 50% RDF (68.62), FYM/Compost @ 20 t/ha + 50% RDF (85.29), trash 10 t/ha + 100% RDF (91.67) and trash 10 t/ha + Soil test base (NPK appli.) (92.59). The cane yield obtained at par in between T_7 (FYM/Compost @ 10 t/ha+ biofertilizer + 50% RDF), T_8 (FYM/Compost @ 10 t/ha+ biofertilizer + 100% RDF), T_9 (FYM/Compost @ 10 t/ha + biofertilizer + Soil test basis (NPK), T_6 (FYM/Compost @ 20 t/ha + Soil test basis (NPK), and T_5 (FYM/Compost @ 20 t/ha +100% RDF).

Table 4 (AS-68):Effect of different treatments on growth, yield and quality of sugarcane

S No.	Treatments	Tillers (000'/ha)	Height (cm)	NMC (000'/ha)	Brix (%)	Yield (t/ha)
1	Application of trash at 10 t/ha + 50% RDF	**74.69**	**221**	**72.22**	**21.27**	**68.62**
2	Application of trash at 10 t/ha + 100% RDF	**103.70**	**235**	**101.23**	**21.40**	**91.67**
3	Application of trash at 10 t/ha + Soil test basis (NPK appli.)	**104.12**	**244**	**102.16**	**21.43**	**92.59**
4	Application of FYM/Compost @ 20 t/ha + 50% RDF (inorganic s.)	**95.88**	**232**	**94.44**	**21.33**	**85.29**
5	Application of FYM/Compost @ 20 t/ha +100% RDF (inorganic s.)	**112.55**	**250**	**110.29**	**21.33**	**101.34**
6	Appli.of FYM/Compost @ 20 t/ha +inorganic nutrient appli. based on Soil test (NPK appli.)	**113.48**	**251**	**111.32**	**21.33**	**101.85**
7	Application of FYM/Compost @ 10 t/ha + biofertilizer (Azoto./Aceto.+PSB) + 50% RDF	**108.33**	**248**	**106.58**	**21.83**	**98.46**
8	Application of FYM/Compost @ 10 t/ha + biofertilizer (Azoto./Aceto.+PSB) + 100% RDF	**110.19**	**251**	**108.33**	**21.83**	**100.10**
9	Application of FYM/Compost @ 10 t/ha + biofertilizer (Azoto./Aceto.+PSB) + Soil test based (NPK appli.)	**112.24**	**253**	**111.11**	**21.90**	**101.13**
	S Em ±	**1.72**	**2.14**	**1.71**	**0.17**	**1.74**
	CD at 5%	**5.17**	**6.42**	**5.14**	**NS**	**5.22**

Project No. - AS 69
Title: Use of plant growth regulators (PGRs) for enhanced yield and quality of Sugarcane.
Objectives:

(1) To accelerate rate and extent of Sugarcane germination through the use of PGRs.

(2) To assess the effect of PGRs on Sugarcane growth, yield and juice quality.

Treatments: 08

T_1: Conventional planting/Farmers practice (3- bud setts).

T_2: Planting of setts after overnight soaking in water.

T_3: Planting of setts after overnight soaking in 50 ppm ethrel solution.

T_4: Planting of setts after overnight soaking in 100 ppm ethrel solution.

T_5: T_1 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP

T_6: T_2 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP

T_7: T_3 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP

T_8: T_4 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP

Design: RBD

Replications: 03, **Planting date:** 28.12.2014

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 (72.14) in planting of setts after overnight soaking in 50 ppm ethrel solution as compared to T_2 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP (64.06), planting of setts after overnight soaking in water (64.76), T_1 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP (65.63) and conventional planting/Farmers practice (3- bud setts) (65.80). The germination percentage obtained at par in between T_7 (T_3 + GA_3 (35 ppm) spray), T_3 (planting of setts after overnight soaking in 50 ppm ethrel solution), T_4 (planting of setts after overnight soaking in 100 ppm ethrel solution) and T_8 (T_4 + GA_3 (35 ppm) spray).

Tillers (000'/ha): The number of shoots increased significantly due to treatment of planting of setts after overnight soaking in 50 ppm ethrel solution (144.14 t/ha) as compared to T_2 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP (120.37), planting of setts after overnight soaking in water (120.68), T_1 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP (121.50) and conventional planting/Farmers practice (3- bud setts) (121.71). The cane yield obtained at par in between T_7 (T_3 + GA_3 (35 ppm) spray), T_3 (planting of setts after overnight soaking in 50 ppm ethrel solution), T_4 (planting of setts after overnight soaking in 100 ppm ethrel solution) and T_8 (T_4 + GA_3 (35 ppm) spray).

Plant height (cm): The plant height increased significantly due to treatment of planting of setts after overnight soaking in 50 ppm ethrel solution (263) as compared to T_2 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP (250), planting of setts after overnight soaking in water (250), T_1 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP (252) and conventional planting/Farmers practice (3- bud setts) (252). The plant height obtained at par in between T_7 (T_3 + GA_3 (35 ppm) spray), T_3 (planting of setts after overnight soaking in 50 ppm ethrel solution), T_4 (planting of setts after overnight soaking in 100 ppm ethrel solution) and T_8 (T_4 + GA_3 (35 ppm) spray).

Number of millable canes (NMC 000'/ha): The NMC influenced significantly due to treatment. Significantly higher NMC values recorded of planting of setts after overnight

soaking in 50 ppm ethrel solution (128.60 t/ha) as compared to T_2 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP (119.03), planting of setts after overnight soaking in water (119.65), T_1 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP (120.27) and conventional planting/Farmers practice (3- bud setts) (120.88). The NMC obtained at par in between T_7 (T_3 + GA_3 (35 ppm) spray), T_3 (planting of setts after overnight soaking in 50 ppm ethrel solution), T_4 (planting of setts after overnight soaking in 100 ppm ethrel solution) and T_8 (T_4 + GA_3 (35 ppm) spray).

Brix (%): The value of brix per cent did not differ significantly due to various treatments during experimentation. The brix percentage ranged between 21.27 to 21.90 per cent.

Cane Yield (t/ha): The cane yield increased significantly due to application of planting of setts after overnight soaking in 50 ppm ethrel solution (129.22 t/ha) as compared to T_2 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP (120.37), planting of setts after overnight soaking in water (120.68), T_1 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP (121.50) and conventional planting/Farmers practice (3- bud setts) (121.71). The cane yield obtained at par in between T_7 (T_3 + GA_3 (35 ppm) spray), T_3 (planting of setts after overnight soaking in 50 ppm ethrel solution), T_4 (planting of setts after overnight soaking in 100 ppm ethrel solution) and T_8 (T_4 + GA_3 (35 ppm) spray).

Summary: The cane yield increased significantly due to application of planting of setts after overnight soaking in 50 ppm ethrel solution (129.22 t/ha) as compared to T_2 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP (120.37), planting of setts after overnight soaking in water (120.68), T_1 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP (121.50) and conventional planting/Farmers practice (3- bud setts) (121.71). The cane yield obtained at par in between T_7 (T_3 + GA_3 (35 ppm) spray), T_3 (planting of setts after overnight soaking in 50 ppm ethrel solution), T_4 (planting of setts after overnight soaking in 100 ppm ethrel solution) and T_8 (T_4 + GA_3 (35 ppm) spray).

Table 5.(AS-69): 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	Conventiona planting/Farmers practice (3- bud setts).	**65.63**	**136.42**	**252**	**120.88**	**21.27**	**121.71**
2	Planting of setts after overnight soaking in water.	**64.76**	**135.39**	**250**	**119.65**	**21.40**	**120.68**
3	Planting of setts after overnight soaking in 50 ppm ethrel solution.	**72.14**	**144.14**	**263**	**128.60**	**21.43**	**129.22**
4	Planting of setts after overnight soaking in 100 ppm ethrel solution.	**70.57**	**142.28**	**261**	**125.82**	**21.33**	**127.37**
5	T_1 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP	**65.80**	**136.63**	**252**	**120.27**	**21.33**	**121.50**
6	T_2 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP	**64.06**	**134.57**	**250**	**119.03**	**21.33**	**120.37**
7	T_3 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP	**72.05**	**144.03**	**263**	**128.81**	**21.40**	**129.12**
8	T_4 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP	**70.40**	**142.08**	**260**	**125.72**	**21.90**	**127.37**
S Em ±		**1.69**	**2.00**	**2.60**	**1.95**	**0.15**	**1.83**
CD at 5%		**5.07**	**6.00**	**7.80**	**5.85**	**NS**	**5.47**