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**ALL INDIA CO-ORDINATED RESEARCH PROJECT**

**ON**

**SUGARCANE**

**(INDIAN COUNCIL OF AGRICULTURAL RESEARCH)**

**(ANNUAL REPORT AGRONOMY)**

**(2013-2014)**

**CENTRE: PUSA (BIHAR)**



**SUGARCANE RESEARCH INSTITUTE  
RAJENDRA AGRICULTURAL UNIVERSITY  
BIHAR PUSA (SAMASTIPUR) -848125**

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**FORM - A**

**Discipline** : Agronomy **Latitude** : 25.5<sup>0</sup>  
**Longitude** : 84.5<sup>0</sup>  
**Altitude** : 52.1 M  
**Year** : 2013-14 **Soil type** : Sandy loam  
**Zone** : North Central and **State** : Bihar  
Eastern  
**Location** : **Pusa**

**Meteorological Data**

Month	Temperature <sup>0</sup> C		Relative Humidity		Rain fall	No. of Rainy days
	Mean maximum	Mean minimum	7 Hrs. %	14 Hrs. %	mm	
January, 2013	19.2	7.3	92	65	12.2	01
February, 2013	24.8	11.5	93	60	30.6	03
March ,2013	30.8	16.0	88	50	0.0	00
April, 2013	35.3	20.6	78	43	13.2	01
May, 2013	35.4	24.5	82	58	100.1	05
June,2013	33.5	26.4	88	71	235.8	09
July, 2013	33.5	26.8	89	69	45.4	07
August, 2013	32.8	26.0	89	68	127.7	10
September, 2013	34.0	25.8	88	63	111.1	03
October ,2013	30.2	22.5	91	67	285.0	06
November ,2013	27.8	14.0	90	46	0.0	00
December, 2013	23.5	10.5	91	55	0.0	00
January, 2014	19.4	9.5	90	68	9.5	02
February, 2014	22.3	10.7	90	60	22.4	03

Station Name with Full address  
Sugarcane Research Institute,  
Pusa (Samastipur) Bihar

**Signature of Scientist**  
Name : Dr. Harendra Singh  
Sr. Scientist –cum- Assoc. Prof. (Agronomy)

### FORM-B

**Name of the Co-ordinated Project** : Agronomic evaluation of early and late promising new sugarcane genotypes  
**(Ratoon)**

**Objective : To work out agronomy of sugarcane genotypes of advance varietal trail (AVT)**

Discipline : Agronomy State : Bihar  
Zone : North Central and Eastern Location : Pusa  
Project Code. : As 42 Year : 2013-2014

#### General information about the trial

1. Design of experiment : R.B.D. (factorial)
2. Number of replication : 3 (three)
3. Treatments : 9 (Nine)

#### (a) Genotypes (3):

<u>Early</u>		<u>Mid- Late</u>	
1.	V <sub>1</sub> - CoP 031	1	V <sub>1</sub> - CoP 042
2.	V <sub>2</sub> - BO 150	2	V <sub>2</sub> - CoP 061
3.	V <sub>3</sub> - BO 153	3	V <sub>3</sub> - BO 154

#### (b) Levels of nutrients:

- (i) 75% of recommended dose of Nitrogen
  - (ii) 100 % of recommended dose of Nitrogen
  - (iii) 125% of recommended dose of Nitrogen
4. Recommended dose of fertilizer ie. 170 kg N, 50 kg P<sub>2</sub>O<sub>5</sub> and 60 kg K<sub>2</sub>O/ha.
- 5 **Fertilizer application:** As per the treatment. Half of total N, full dose of P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O were applied as basal. Rest of half of N was applied in two split dose after 1<sup>st</sup> irrigation and earthing up.

**6. Date of Stubble shaving:**

Early: 25.02.2013                      mid- Late     : 25.02.2013

Date of harvesting: 10.02.2014

7. Crop grown in previous season- Sugarcane plant crop

8. Gross plot size-     8x 5.40 m.

9. (a) Distance between two rows : 90 cm  
 (b) Length of gross plot: 8m  
 (c) No. of rows in gross plot: 6 (six)  
 (d) No. of rows in net plot: 4 (four)  
 (e) Net plot size 8 x 3.60m
10. Soil type: sandy loam
11. pH value : 8.2
12. Soil fertility status at the time of planting.

<u>Soil test status</u>	<u>Values</u>
N- High/Medium/Low	212 kg N/ha.
P-High/Medium/ Low	20 kg P <sub>2</sub> O <sub>5</sub> /ha.
K-High/Medium/Low	116 kg K <sub>2</sub> O/ha.

13. No. of Irrigations given: Three
14. No. of Weeding: Two
15. No. of Hoeing : One
16. Plant protection measures.

<u>Pesticides/fungicides</u>	<u>Applied dose</u>	<u>Date</u>
1. Monocrotophos 40 EC	1.00 Lit/ha	12.07.2013
2. Monocrotophos 40 EC	1.00 Lit/ha	14.08.2013

**17. Damage to the crop due to**

<u>Cause</u>	<u>Intensity of damage</u>	<u>Nature of damage</u>
Shoot borer	Slight	Partial
Top borer	Slight	Partial

18. The experiment is valuable: Yes
19. Name of the Co-operator: - Dr. Harendra Singh
20. Signature of Scientist Incharge :
21. Name & Designation: Dr. Harendra Singh, Sr. Scientist (Agronomy)

**Result: AS 42(A) Evaluation of early sugarcane promising genotypes during spring season (Ratoon) 2013-14.**

The data on growth parameters yield attributes and cane yield as affected by different early promising genotypes of sugarcane and levels of nitrogen application during spring season have been presented in table -1

**Effect of genotypes:** Among the three early genotypes, BO 153 recorded significantly higher number of tillers and number of millable cane than BO 150 and CoP 031 and all the genotypes differed significantly among themselves. BO 153 recorded significantly higher cane yield (67.81 t/ha) than CoP 031 (55.59 t/ha) though at par with BO 150 (64.77 t/ha).

**Effect of levels of Nitrogen:** 125% of recommended dose of N recorded significantly higher numbers of tillers, number of millable cane and cane yield than 75% recommended dose though at par with 100% recommended dose. Pol % in juice was not influenced significantly due to application of different levels of nitrogen.

Interaction effect of V x F was found to be non-significant.

**Result AS 42(A). Evaluation of Mid-late sugarcane promising genotypes during spring season (Ratoon) 2013-14**

The data on growth yield attributes and cane yield as affected by mid-late sugarcane genotypes and levels of nitrogen application during spring season have been presented in Table -2

**Effect of genotypes:** Among the three genotypes BO 154 recorded significantly higher number of tillers and NMC than other genotypes. BO 154 recorded significantly higher cane yield (75.24 t/ha) than CoP 042 (54.92 t/ha) though at par with CoP 2061 (67.12 t/ha). The later two were also similar in respect to cane yield. Pol% in juice was more in CoP 042 (16.78) than other genotypes.

**Effect of levels of nitrogen:** 125% of recommended dose of N recorded significantly higher number of tillers, number of millable canes and cane yield than 75% recommended dose, though at par with 100% of recommended dose. Pol% in juice remained unaffected by levels of nitrogen.

Interaction effect of V x F was found to be non-significant.

**Table - 1 AS 42(A): Effect of early promising genotypes of sugarcane and levels of nitrogen (Ratoon) during spring season at Pusa, Bihar 2013-14**

<b>Treatments</b>	<b>Clump (000 /ha)</b>	<b>No. of tillers ('000/ha)</b>	<b>NMC ('000/ha)</b>	<b>Cane yield (t/ha)</b>	<b>Pol % in juice</b>
V <sub>1</sub> CoP 031	46.48	154.48	86.44	55.59	16.15
V <sub>2</sub> BO 150	39.05	131.33	80.18	64.77	16.31
V <sub>3</sub> BO 153	49.75	182.27	94.88	67.81	16.56
CD (P =0.05)	3.60	20.19	10.64	5.88	NS
<b>Levels of Nitrogen :</b>					
N <sub>1</sub> 75%	43.00	133.94	72.37	53.92	16.42
N <sub>2</sub> 100%	45.96	161.88	90.22	62.79	16.40
N <sub>3</sub> 125%	46.36	172.07	98.92	70.94	16.76
CD. (P =0.05)	3.60	20.19	10.64	5.88	NS



**Table – 2AS 42(A) : Effect of mid- Late promising genotypes of sugarcane and levels Of nitrogen (Ratoon) during spring season at Pusa, Bihar 2013-14**

Treatments	Clump (000/ha)	No. of tillers ('000/ha)	NMC ('000/ha)	Cane yield (t/ha)	Pol % in juice
V <sub>1</sub> CoP 042	41.85	112.81	81.26	54.92	16.78
V <sub>2</sub> CoP 061	48.77	157.14	96.33	67.12	16.20
V <sub>3</sub> BO 154	50.18	186.16	114.70	75.74	16.40
CD (P =0.05)	NS	17.20	11.04	6.43	NS
<b>Levels of Nitrogen</b>					
N <sub>1</sub> 75%	44.51	131.66	81.73	52.33	16.55
N <sub>2</sub> 100%	46.41	158.47	99.47	67.12	16.48
N <sub>3</sub> 125%	49.88	137.96	110.59	77.83	16.35
CD. (P =0.05)	NS	17.20	11.05	6.43	NS

#### **AS 42(A): Summary**

The genotypes BO 153 registered maximum cane yield in spring season in early group but was at par with BO 150. Under mid-late group BO 154 yielded significantly more than that of CoP 042 but was at par with CoP 2061 in spring season. Varieties response up to 125 % RDN and were on par with 100 % RDN.

**FORM-B**

**Name of the Co-ordinated Project** : Agronomic evaluation of early and late promising new sugarcane genotypes

**Objective: To work out agronomy of sugarcane genotypes of advance varietal trail (AVT)**

Discipline : Agronomy State : Bihar

Zone : North Central Location : Pusa  
And Eastern

Project Code. : As 42 (New set) Year : 2013-2014

**General information about the trial**

4. Design of experiment : R.B.D. (factorial)

5. Number of replication: 3 (three)

6. Treatments : 9 (Nine)

(a) Genotypes (3):

	<u>Early</u>			<u>Mid-Late</u>
1.	V <sub>1</sub> - CoP 111	1	V <sub>1</sub>	- CoP 123
2.	V <sub>2</sub> - CoP 112	2	V <sub>2</sub>	- CoP 092
3.	V <sub>3</sub> - CoP 081	3	V <sub>3</sub>	- BO 155

(b) Levels of nutrients:

(iv) 75% of recommended dose of Nitrogen

(v) 100 % of recommended dose of Nitrogen

(vi) 125% of recommended dose of Nitrogen

4. Recommended dose of fertilizer ie. 150 kg N, 85 kg P<sub>2</sub>O<sub>5</sub> and 60 kg K<sub>2</sub>O/ha.

5 **Fertilizer application:** As per the treatment. Half of total N, full dose of P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O were applied as basal. Rest of half of N was applied in two split dose after 1<sup>st</sup> irrigation and earthing up.

6. Date of Planting:

Early: 04.02.2013 mid- Late : 04.02.2013

Date of harvesting: 05.02.2014

7. Crop grown in previous season- Rice

8. Gross plot size- 8x 5.40 m.

9. (a) Distance between two rows : 90 cm

(b)Length of gross plot: 8m

(c)No. of rows in gross plot: 6 (six)

(d)No. of rows in net plot: 4 (four)

(e)Net plot size 8 x 3.60m

10. Soil type: sandy loam

11. pH value : 8.3

12. Soil fertility status at the time of planting.

<u>Soil test status</u>	<u>Values</u>
N- High/Medium/Low	213 kg N/ha.
P-High/Medium/ Low	21 kg P <sub>2</sub> O <sub>5</sub> /ha.
K-High/Medium/Low	118 kg K <sub>2</sub> O/ha.

13. No. of Irrigations given: Three

14. No. of Weeding: Two

15. No. of Hoeing: One

16. Plant protection measures.

<u>Pesticides/fungicides</u>	<u>Applied dose</u>	<u>Date</u>
1. Monocrotophos 40 EC	1.00 Lit/ha	15.07.2013
2. Monocrotophos 40 EC	1.00 Lit/ha	20.08.2013

17. Damage to the crop due to

<u>Cause</u>	<u>Intensity of damage</u>	<u>Nature of damage</u>
Shoot borer	Slight	Partial
Top borer	Slight	Partial

18. The experiment is valuable: Yes

19. Name of the Co-operator: - Dr. Harendra Singh

20. Signature of Scientist Incharge :

21 Name & Designation: Dr. Harendra Singh, Sr. Scientist (Agronomy)

**Result: AS 42 (B) Evaluation of early sugarcane promising genotypes during spring season 2013-14**

The data on growth parameters yield attributes and cane yield as affected by different early promising genotypes of sugarcane and levels of nitrogen application during spring season have been presented in table -3

**Result of 1<sup>st</sup> year**

**Effect of Variety** : Variety, CoP 112 recorded significantly higher number of tillers (168.0 thousand /ha) , millable canes (120.0 thousand /ha) and cane yield (101.0 t/ha) was statistically similar to CoP 111 (Table 3 ). However, pol. Percent juice did not affected by the varieties.

**Nitrogen level** : Among the nitrogen levels , application of 125 % RDN recorded significantly higher number of tillers (176.2 thousand /ha) , millable canes (124.0 thousand /ha) and cane yield (107.04 t/ha) though, it was on par with 75 % RDN in case of millable canes only (Table 3). Pol. Per cent juice remains unaffected by level of nitrogen.

**Result AS 42.(B) Evaluation of late sugarcane promising genotypes during spring season**

The data on growth yield attributes and cane yield as affected by late sugarcane genotypes and levels of nitrogen application during spring season have been presented in Table -4

**Result of 1<sup>st</sup> year**

**Effect of Variety** : Among the Varieties, CoP 092 recorded significantly higher number of tillers (180.1 thousand /ha) , millable canes (126.0 thousand /ha) and cane yield (107.2 t/ha) was significantly superior to BO 155. Varieties had no significant impact on pol percent juice (Table 4) though comparatively higher values was obtained due to the variety CoP 092 (16.82 %)

**Nitrogen level** : Highest number of tillers (194.2 thousand /ha) and millable canes (133.0 thousand /ha) were obtained with application of 125 % of recommended N, which were significantly higher than 100 and 75 % of recommended N. Maximum cane yield (111.0 t/ha) was obtained with application of 125 % of recommended N, which was statistically at par with

100 % of recommended N and significantly higher than 75 % of recommended N. N level failed to show any significant effect on pol percent of juice.

**Table - 3 AS 42(B): Effect of early promising genotypes of sugarcane and levels of nutrients during spring season at Pusa, Bihar 2013-14**

<b>Treatments</b>	<b>Germination %</b>	<b>No. of tillers ('000/ha)</b>	<b>NMC ('000/ha)</b>	<b>Cane yield (t/ha)</b>	<b>Pol % in juice</b>	<b>Pol in Cane</b>
V <sub>1</sub> CoP 111	36.5	128.2	102.0	80.0	16.74	14.46
V <sub>2</sub> B. O. 112	36.7	168.0	120.0	101.00	17.41	14.69
V <sub>3</sub> CoP 0181	27.9	148.2	114.0	95.0	16.85	14.66
SEm ±	1.66	6.64	4.57	3.35	0.199	-
CD (P = 0.05)	5.0	19.9	13.8	10.0	NS	-
CV %	14.8	13.5	12.3	10.92	3.52	-
<b>Levels of Nutrients:</b>						
F <sub>1</sub> 75%	33.5	122.2	97.0	75.0	17.10	14.77
F <sub>2</sub> 100%	32.7	146.0	115.0	94.0	17.07	14.57
F <sub>3</sub> 125%	35.0	176.2	124.0	107.0	16.83	14.47
SEm ±	1.66	6.64	4.59	3.35	0.199	-
CD. (P = 0.05)	NS	19.9	13.8	10.0	NS	-
CV %	14.79	13.5	12.3	10.9	3.52	-

**Table – 4 AS 42(B): Effect of mid- Late promising genotypes of sugarcane and levels of nutrients during spring season at Pusa, Bihar 2013-2014**

Treatments	Germination %	No. of tillers ('000/ha)	NMC ('000/ha)	Cane yield (t/ha)	Pol % in juice	Pol in cane
V <sub>1</sub> CoP 123	31.0	160.9	121.0	98.0	16.66	13.95
V <sub>2</sub> CoP 092	33.4	180.1	126.0	107.2	16.82	14.13
V <sub>3</sub> BO 155	33.4	134.8	107.0	90.0	16.62	14.31
SEm ±	1.53	7.20	3.94	3.89	0.181	-
CD at 5%	4.6	21.6	11.8	11.7	NS	-
CV %	14.1	13.6	10.00	11.9	3.26	-
<b>Levels of Nutrients</b>						
F <sub>1</sub> 75%	31.7	125.2	101.0	84.0	16.78	14.23
F <sub>2</sub> 100%	32.8	156.4	120.0	100.2	16.72	14.12
F <sub>3</sub> 125%	33.3	194.2	133.0	111.0	16.60	14.04
SEm ±	1.53	7.20	3.94	3.89	0.181	-
CD. (P = 0.05)	NS	21.6	11.8	11.7	NS	-
CV %	14.1	13.6	10.0	11.9	3.26	-

**AS 42(B): Summary**

In early group, CoP 092 recorded significantly higher cane yield (107.2 t/ha) than BO 155 though was at par with CoP 123 (98.0 t/ha) while, in mid-late group CoP112 having cane yield of (101.0 t/ha) significantly out yielded CoP 111 but at par with CoP 081 (95.0 t/ha). Higher cane yield was recorded at 125 % of recommended dose of nitrogen but on par with 100 % RDF in early group where as in mid-late group response was significantly upto 125 % of RDF.

**FORM B**

Name of the Co-ordinated Project	:	Plant geometry in relation to mechanization in sugarcane.
Objective	:	To work out optimum plant geometry for use of farm machinery.
Discipline	:	Agronomy
Zone	:	North Central and Eastern
State	:	Bihar
Location	:	Pusa, Bihar
Project code No.	:	AS 63
Year of start	:	<b>2012-2013</b>
Year	:	2013-14

**Treatment:**

## 1. Plant geometry (Three)

(i) 120 cm row distance (P<sub>1</sub>)(ii) 150 cm row distance (P<sub>2</sub>)(iii) 30:120 cm for subtropical region (paired) (P<sub>3</sub>)

## 2. Genotypes: Four

(i) B.O. 139 (V<sub>1</sub>) (ii) B.O. 153 (V<sub>2</sub>) (iii) CoP 9301 (V<sub>3</sub>)(iv.) CoLK 9484 (V<sub>4</sub>)

## 3. Design: Split Plot

## 4. Replication:3

## 5. Plot size: 6.0x8.0 m.

## 6. Planting season: Spring (Feb. –March)

## 7. Date of planting: 11.02.2013

Date of harvesting: 10.02.2014

## 8. Soil type: Sandy loam

## 9. pH value: 8.3



10. Soil fertility status at the time of planting.

<u>Soil test status</u>	<u>Values</u>
N- High/Medium/Low	213 kg N/ha.
P-High/Medium/ Low	23 kg P <sub>2</sub> O <sub>5</sub> /ha.
K-High/Medium/Low	117 kg K <sub>2</sub> O/ha.

12. No. of Irrigations given: 3.

13. No. of Weedings : Two.

14. No. of Hoeings : One.

15. Plant protection measures.

<u>Pesticides/fungicides</u>	<u>Applied dose</u>	<u>Date</u>
1. Monocrotophos 40 EC	1.00 Lit/ha	12.07.2013
2. Monocrotophos 40 EC	1.00 Lit/ha	13.08.2013

16. Damage to the crop due to

<u>Cause</u>	<u>Intensity of damage</u>	<u>Nature of damage</u>
Shoot borer	Slight	Partial
Top borer	Slight	Partial

17. The experiment is valuable: Yes

18. Name of the Co-operator: - Dr. Harendra Singh, Sr. Scientist (Agronomy)

19. Signature of Scientist Incharge:

20. Name & Designation: Dr. Harendra Singh, Sr. Scientist (Agronomy)

### **Result AS 63: To work out optimum plant geometry for use of farm machinery**

#### **Results of II<sup>nd</sup> year**

**Effect of planting geometry** : Planting geometry did not exert marked variation on germination per centage of sugarcane. 30:120 cm row spacing produced maximum number of tillers (180.5 thousand /ha), millable canes (121.9 thousand /ha) and cane yield (93.3 t/ha) was statistically similar to 120 cm row spacing and significantly superior to 150 cm row spacing. Planting geometry failed to have any significant influence on pol percent juice.

**Effect of Variety** : Varieties exerted marked effect on germination count and the highest germination of 36.3 percent was recorded with the variety CoP 9301. However, significantly higher number of tillers (176.5 thousand /ha), millable canes (115.9 thousand /ha) and cane yield (88.5 t/ha) were obtained with the variety BO 153. Among the variety CoP 9301 showed significantly higher pol percentage (17.71 %) followed in order by CoLK 94184, BO 153 and BO 139 (Table 5).

**Table- 5-AS 63 Effect of plant geometry for use of farm machinery, Pusa (Bihar)**

Treatment	Germination %	No. of tillers (000/ha)	NMC (000/ha)	Cane yield (t/ha)	Pol % in juice
<b>Plant geometry</b>					
120 cm (P <sub>1</sub> )	32.9	138.9	98.1	76.6	17.20
150 cm (P <sub>2</sub> )	31.3	99.1	71.2	62.8	17.13
30:120 cm (P <sub>3</sub> )	32.0	108.5	121.9	93.3	17.45
SEm ±	2.92	11.90	7.90	5.21	0.245
CD (P = 0.05)	NS	47.0	31.1	20.5	NS
CV%	15.84	14.9	14.1	11.7	2.46
<b>Varieties</b>					
BO 139 (V <sub>1</sub> )	25.2	111.5	85.2	79.6	16.88
BO 153 (V <sub>2</sub> )	34.0	176.5	115.9	88.1	17.15
CoP 9301 (V <sub>3</sub> )	36.3	122.00	85.2	66.1	17.71
CoLK 94184 (V <sub>4</sub> )	32.8	148.0	101.9	76.0	17.30
SEm ±	1.33	5.21	3.25	2.8	0.117
CD (P = 0.05)	4.0	15.5	9.7	8.3	0.35
CV%	12.5	11.2	10.1	10.8	2.03

### AS 63: Summary

Plant geometry 30:120 cm (paired row) performed significantly better in cane yield followed by 120 cm row distance. Varieties BO 153 produced significantly higher cane yield (88.5 t/ha) than CoP 9301 and CoLK 9484 but was at par with that of BO 139 (79.6 t/ha).

## FORM B

Name of the Co-ordinated Project : Enhancing sugarcane productivity and profitability under wheat-sugarcane cropping system.

Objective : To enhance the productivity of sugarcane under wheat-sugarcane cropping system.

Discipline : Agronomy

Zone : North Central and Eastern

State : Bihar

Location : Pusa

Project code No. : AS 65

Year of start : 2011-12

Year : 2013-14

### General Information about the trial

1. Design of Expt.: R.B.D.
2. No. of replication : 3(Three)
3. Treatments : 9 (nine)

T<sub>1</sub>: Autumn planted sugarcane

T<sub>2</sub>:T<sub>1</sub>+wheat (1:2)

T<sub>3</sub>:T<sub>1</sub> + wheat (1:3).

T<sub>4</sub>: Wheat sown on 15<sup>th</sup> Nov.-Late Sugarcane.

T<sub>5</sub>: Wheat sown on 15<sup>th</sup> Dec.-Late Sugarcane.

T<sub>6</sub>: FIRB sowing of wheat of 15<sup>th</sup> Nov. (75 cm with 3 row of wheat) + sugarcane in furrow in 3<sup>rd</sup> week of February.

T<sub>7</sub>: FIRB sowing of wheat of 15<sup>th</sup> Nov. (75 cm with 3 row of wheat) + sugarcane in furrow in 3<sup>rd</sup> week of March.

T<sub>8</sub>:T<sub>6</sub> with 15<sup>th</sup> Dec. sowing of wheat .

T<sub>9</sub>:T<sub>7</sub> with 15<sup>th</sup> Dec. sowing of wheat.

4. Fertilizer application as per recommended rate of fertilizer i.e. 150 kg N, 85 kg P<sub>2</sub>O<sub>5</sub> and 60 kg K<sub>2</sub>O/ha. Half of total N and full dose of P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O were applied as basal. Rest half of N was applied in two split doses.

5. Name of the variety: BO 141
6. Date of planting: As per treatment
7. Date of harvesting: 20.2.2013 (Sugarcane)
8. Gross plot size: 8x 5. 40m
  - (a) Distance between two rows: 90 cm
  - (b) Length of rows in gross plot: 8m
  - (c) No. of rows in gross plot: 6 (six)
  - (d) No. of rows in net plot: 4 (four)
  - (e) Net plot size 8x 3.60m
9. Soil type: sandy loam
10. pH value : 8.1
11. Soil fertility status at the time of planting.

<u>Soil test status</u>	<u>Values</u>
N- High/Medium/Low	220 kg N/ha.
P-High/Medium/ Low	20 kg P <sub>2</sub> O <sub>5</sub> /ha.
K-High/Medium/Low	130 kg K <sub>2</sub> O/ha.

12. No. of Irrigations given: As per treatment
13. No. of Weedings : As per treatments in technical programme.
14. No. of Hoeings : As per treatments in technical programme.
15. Plant protection measures.

<u>Pesticides/fungicides</u>	<u>Applied dose</u>	<u>Date</u>
1. Monocrotophos 40 EC	1.00 Lit/ha	17.07.2013
2. Monocrotophos 40 EC	1.00 Lit/ha	09.08.2013

16. Damage to the crop due to
 

<u>Cause</u>	<u>Intensity of damage</u>	<u>Nature of damage</u>
Shoot borer	Slight	Partial
Top borer	Slight	Partial
17. The experiment is valuable: Yes
18. Name of the Co-operator: - Dr. Harendra Singh
19. Signature of Scientist In charge:
20. Name & Designation: Dr. Harendra Singh, Sr. Scientist (Agronomy)

### **Result :AS-65**

**Results of II<sup>nd</sup> year** : Sole sugarcane (T<sub>1</sub>) recorded significantly higher number of tillers (149.7 thousand /ha) , millable canes (108.0 thousand /ha) , cane yield (83.7 t/ha) and pol. percent (17.21 %) juice was statistically similar to T<sub>2</sub> in case of no. of tillers , T<sub>2</sub> , T<sub>3</sub> , T<sub>6</sub> and T<sub>8</sub> in case of millable canes and cane yield , T<sub>2</sub>, T<sub>4</sub>, T<sub>5</sub>, T<sub>6</sub>, T<sub>7</sub>, T<sub>8</sub> and T<sub>9</sub> in case of pol. Per cent juice. Accommodation of three rows of wheat between two rows of sugarcane (T<sub>3</sub>) recorded higher sugarcane equivalent yield than other intercropping as well as sole sugarcane (Table 6).

Maximum wheat grain (50.2 q/ha) and straw yield (60.3 q/ha) was recorded due to wheat sown on 15<sup>th</sup> November followed by late planted sugarcane (T<sub>4</sub>) was statistically similar to wheat sown on 15<sup>th</sup> December followed by late sugarcane (T<sub>5</sub>) and significantly superior to rest of the combinations.

#### **AS 65: Summary**

In the system maximum cane yield of 83.7 t/ha was recorded in the sole autumn planted cane which was on par with that of sugarcane + wheat (1:2) and FIRB sowing wheat on 15<sup>th</sup> November and sugarcane in 3<sup>rd</sup> week of February. The reduction in yield on an average due to intercropping of wheat, planting of sugarcane after harvest of wheat, relay cropping of sugarcane in the 3<sup>rd</sup> week of February and March was 9.4 % , 31.0 % , 14.0 % and 15.9 % , respectively. In case of cane equivalent yield maximum value of 100.0 t/ha was recorded in intercropping of wheat 1:3 row ratios.

**Table: 6 AS 65 Yield and yield attributing characters of sugarcane under wheat-sugar cropping system 2013-14, Pusa (Bihar)**

Treatment	Germination %	No. of tillers ('000/ha)	NMC ('000/ha)	Cane yield (t/ha)	Pol % in juice	Germination %	Tiller Row/m	Yield q./ha (grain)	Yield q./ha (straw)	CEY (t/ha)
<b>Sugarcane</b>						<b>Wheat</b>				
T <sub>1</sub>	33.00	149.7	108.0	83.7	17.21	-	-	-	-	83.6
T <sub>2</sub>	32.00	133.0	100.2	80.2	17.01	39.0	84.0	21.3	26.6	96.1
T <sub>3</sub>	32.00	129.6	98.0	77.2	16.43	38.0	81.0	30.7	37.9	100.0
T <sub>4</sub>	27.66	113.2	85.6	58.9	16.92	38.0	80.0	50.2	60.3	95.9
T <sub>5</sub>	29.00	108.5	79.3	56.5	16.66	35.0	78.0	45.6	57.0	90.4
T <sub>6</sub>	31.00	130.6	96.3	73.1	17.17	39.0	78.0	30.7	37.3	95.8
T <sub>7</sub>	31.00	125.5	94.1	70.9	17.20	40.0	71.0	28.1	36.7	92.1
T <sub>8</sub>	30.00	125.9	94.8	72.2	16.58	36.0	64.0	25.2	29.4	90.6
T <sub>9</sub>	30.00	126.9	93.1	68.5	17.00	36.0	63.0	23.7	28.4	86.0
SEm	2.750	6.09	4.39	4.08	0.230	2.95	4.24	2.42	3.04	-
CD (P = 0.05)	NS	18.3	13.2	12.2	0.69	NS	12.9	7.33	9.2	-

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**(ANNUAL REPORT AGRONOMY)**

**(2013-2014)**

**CENTRE: PUSA (BIHAR)**



**SUGARCANE RESEARCH INSTITUTE  
RAJENDRA AGRICULTURAL UNIVERSITY  
BIHAR PUSA (SAMASTIPUR) -848125**

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