Annual Report (Crop Production) of Faridkot for 2016-17

There were six experiments at Faridkot during 2016-17 as listed below:

1. AS67*: Optimization of fertigation schedule for sugarcane through micro irrigation technique under different agro-climatic conditions (*with modified treatments)
2. AS 68: Impact of integrated application of organics and in organics in improving soil health and sugarcane productivity (Ratoon II).
3. AS 69: Use of plant growth regulators (PGRs) for enhanced yield and quality of sugarcane
4. AS 70: Scheduling irrigation with mulch under different sugarcane planting methods
5. AS 71: Carbon sequestration assessment in sugarcane based cropping system
6. AS 72: Agronomic performance of elite sugarcane genotypes (Early and Midlate)

WEATHER AT FARIDKOT

Meteorological data, recorded during the crop season 2016-17, is given in Table 1. The highest rainfall (190.9 mm) was in month of August, 2016 followed by 91.7 mm in July, 2016; while there was 75.0 mm rain in March, 2016. The highest value of maximum temperature (40.6 ^{0}C) was in month of May, 2016 followed by June (39.4 ^{0}C); while the lowest value of maximum temperature (18.1 ^{0}C) was in month of January, 2017. The highest values of minimum temperature (28.4 ^{0}C) was in month of June, 2016 followed by July (26.6 ^{0}C); while the lowest values (7.1 ^{0}C) was in January, 2017.

Table 1. Meteorological Data for 2016-17
North West Zone
Location – FARIDKOT

Month	Temperature (ºC)		R.H. (%)		Rainfall (mm)	No. of rainy days
	Max.	Min.	Max.	Min.		
February 2016	23.0	8.3	92	47	23.2	2.0
March 2016	28.1	14.7	85	46	75.0	4.0
April 2016	36.5	20.3	59	23	2.0	0.0
May 2016	40.6	25.0	58	29	28.5	2.0
June 2016	39.4	28.4	69	41	72.7	3.0
July 2016	35.3	27.9	81	64	91.7	5.0
August 2016	33.8	26.6	86	71	190.9	8.0
September 2016	34.4	25.2	83	58	0.0	0.0
October 2016	34.0	18.7	87	36	0.0	0.0
November 2016	28.6	10.6	89	32	0.0	0.0
December 2016	23.4	8.5	94	50	0.0	0.0
January 2017	18.1	7.1	93	61	16.7	2.0
February 2017	23.8	8.8	89	40	0.0	0.0

EXPERIMENT WISE RESULTS

AS-67: Optimization of fertigation schedule for sugarcane through micro irrigation technique under different agro-climatic conditions (ratoon)

Objective: To economize water use in cultivation and improve sugarcane productivity.

*Treatments:

A. Irrigation water/method applied:

I_1: Surface drip irrigation in paired row trench at 60% CPE

I_2: Surface drip irrigation in paired row trench at 80% CPE

I_3: Surface drip irrigation in paired row trench at 100% CPE

B. Nitrogen Levels (Fertigation):

N1: 60% RDN

N2: 80% RDN

N3: 100% RDN (225 kg N/ha)

Absolute Control: I4: Flood Irrigation with RDN in trench planted sugarcane

Treatments are modified

Replications: 3

Date of planting: 27.03.2015

Date of ratooning: 15.01.2016

Results: Surface drip was laid in paired row trench plots panted at 30: 120 cm spacing. Drip irrigation at 100% CPE/IW ratio was significantly better than surface flood irrigation in cane yield (Table 2). When drip irrigation was applied at 80% CPE/IW the cane yield was at par with surface irrigation. Irrigation water applied was about 40% less with drip irrigation (100% CPE) than flood irrigated plots. Cane yield with 100% recommended dose of nitrogen (RDN) applied to flood irrigated crop was at par with Fertigation 60% and 80% RDN in drip irrigated crop. Apparent water productivity and total water productivity with drip was higher than surface irrigation.

Conclusion: Surface drip irrigation in paired row trench planted sugarcane (120:30 cm) helped in saving of 40% irrigation water and 20% nitrogen fertilizer.

Table : Yield and water productivity of sugarcane under different surface drip irrigation methods at Faridkot during 2016-17 (ratoon)

Irrigation treatments	Cane yield (t/ha)	Irrigation Water Input(cm)	Total water in put# (cm)	Apparent water productivity (kg/m^3)	Total water productivity (kg/m^3)
Surface drip irrigation at 60% CPE	77.0	30	78.4	25.7	9.8
Surface drip irrigation at 80% CPE	83.5	40	88.4	20.9	9.4
Surface drip irrigation at 100% PE	88.7	50	98.4	17.8	9.0
LSD (p=0.05)	7.3	-	-	1.7	NS
60% RDN	74.9	40	88.4	19.2	8.5
80% RDN	84.6	40	88.4	21.8	9.6
100% RDN	91.2	40	88.4	23.7	10.4
LSD (p=0.05)	5.3	-	-	1.4	0.6
Absolute control	80.3	82.5	130.9	9.7	6.1
LSD (p=0.05) Drip vs Flood	6.6	-	-	1.7	0.8

#Total water input=IWI + Rainfall i.e. 48.4 cm

AS-68 Impact of integrated application of organics and in organics in improving soil health and sugarcane productivity.

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

Year of start : 2014 - 2015

Cropping system : Sugarcane – Ratoon-I – Ratoon-II

Treatment & Methodology: (Plant 2014-15, Ratoon 2015-16 and Ratoon 2016-17)

Treatments	**Sugarcane (plant crop)**	**Ratoon-I**	**Ratoon- II**
T1	No organic + 50% RDF	Application of trash at 10 tonnes/ ha + 50% RDF	Application of trash at 10 tonnes/ ha + 50% RDF
T2	No organic + 100% RDF	Application of trash at 10 tonnes/ ha + 100% RDF	Application of trash at 10 tonnes/ ha + 100% RDF
T3	No organic + soil test based recommendation	Application of trash at 10 tonnes/ ha + soil test basis (NPK application)	Application of trash at 10 tonnes/ ha + soil test basis (NPK application)
T4	Application of FYM/Compost @ 20 tonnes / ha + 50% RDF (inorganic source)	Application of FYM/Compost @ 20 tonnes / ha + 50% RDF (inorganic source)	Application of FYM/Compost @ 20 tonnes / ha + 50% RDF (inorganic source)
T5	Application of FYM/Compost @ 20 tonnes / ha + 100% RDF (inorganic source)	Application of FYM/Compost @ 20 tonnes / ha + 100% RDF (inorganic source)	Application of FYM/Compost @ 20 tonnes / ha + 100% RDF (inorganic source)
T6	Application of FYM/Compost @ 20 tonnes / ha + in organic nutrient application based on soil test (rating chart)	Application of FYM/Compost @ 20 tonnes / ha + in organic nutrient application based on soil test (NPK application)	Application of FYM/Compost @ 20 tonnes / ha + in organic nutrient application based on soil test (NPK application)
T7	Application of FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter* + *PSB*) + 50% RDF	Application of FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter* + *PSB*) + 50% RDF	Application of FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter* + *PSB*) + 50% RDF
T8	Application of FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter* + *PSB*) + 100% RDF	Application of FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter* + *PSB*) + 100% RDF	Application of FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter* + *PSB*) + 100% RDF
T9	Application of FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter* + *PSB*) + soil test basis	Application of FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter* + *PSB*) + soil test basis (NPK application)	Application of FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter* + *PSB*) + soil test basis (NPK application)

**The biofertilizer (Azotobacter/Acetobacter+PSB) was applied @ 5 kg/acre (solid based fertilizer 10^{7-8}cfu), **Trash was inoculated with cellulolytic organism Trichoderma viride @ 500 g/tonne.*

Variety : CoJ 88
Design : RBD
Replications : Three
Date of planting: 22.03.2014
Date of first ratooning: 23.02.2015
Date of second ratooning: 10.01.2016

Results

Plant (2014-15): Cane yield (94.8 t/ha) was the highest (Table 3a) with application of FYM/Compost @ 20 tonnes / ha + inorganic nutrient based on soil test (T_6) which was significantly higher than only 50% RDF without organic sources **(**T_1**),** 100% RDF without organic sources **(**T_2**)** and application of FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/Acetobacter* + *PSB*) + 50% RDF. All other treatments were at par with T_6. There was no effect of treatments on sucrose %.

Ratoon I (2015-16): Cane yield (94.3 t/ha) was the highest (Table 3a) with application of FYM/Compost @ 20 tonnes / ha + inorganic nutrient based on soil test (T_6) which was significantly higher than all treatments except T5 (89.9 t/ha), T9 (86.4 t/ha) and T4 (84.4 t/ha). These treatments also have the residual effect of FYM applied to plant crop.

Ratoon II (2016-17): Cane yield (99.0 t/ha) was the highest (Table 3a) with application of FYM/Compost @ 20 tonnes / ha + inorganic nutrient based on soil test (T_6) which was significantly higher than T1, T2 and T7 and was at par with other treatments. Sugar yield (CCS t/ha) was also the highest in T6 (13.53 t/ha) which was at par with all treatments except T1 (Table 3b).

Economics: Gross and net returns were higher in T6 (Table 3c). Application of FYM with soil test based inorganic nutrients was better than the treatments having supplied with only inorganic nutrients.

On the basis of one plant and two ratoon crops it can be concluded that application of FYM/Compost @ 20 tonnes / ha + inorganic nutrient based on soil test (T_6) is the best treatment for getting higher mean cane yield followed by T5, T9 and T8 (Table 3 a). The Gross and net returns are also having same trend (Table 3c)

Table 3a: Cane yield and sucrose% of (Plant- Ratoon I – Ratoon II) during 2014-15, 2015-16 and 2016-17

Treatments	Cane Yield (t/ha)				Sucrose (%)		
	Plant (2014-15)	Ratoon I (2015-16)	Ratoon II (2016-17)	Mean	Plant (2014-15)	Ratoon I (2015-16)	Ratoon II (2016-17)
T_1	67.1	72.1	79.8	73.0	18.67	18.32	18.58
T_2	73.1	75.6	85.7	78.1	18.10	18.00	19.06
T_3	83.9	81.0	90.9	85.3	18.48	18.46	19.14
T_4	83.4	84.4	90.6	86.1	18.35	18.63	19.35
T_5	90.8	89.9	95.1	91.9	18.14	18.17	19.70
T_6	94.8	94.3	99.0	96.0	18.40	18.29	19.29
T_7	79.5	78.5	86.2	81.4	18.40	18.49	19.09
T_8	88.9	82.0	89.1	86.7	18.92	18.51	19.30
T_9	91.9	86.4	95.5	91.3	18.40	18.48	19.35
CD (5%)	11.9	9.9	10.2		NS	NS	NS

Table 3 b: Growth, yield and quality of sugarcane (Ratoon II) during 2016-17 under various treatments

Treatments	No. of Shoots 000/ha	NMC 000/ha	Cane length (cm)	Cane diameter (cm)	Single cane wt. (g)	Cane yield (t/ha)	Sucrose (%)	CCS%	CCS t/ha
T_1	169.4	132.3	237	2.37	816	79.8	18.58	13.05	10.47
T_2	186.2	143	242	2.2	830	85.7	19.06	13.49	11.56
T_3	195.6	149.6	250	2.23	863	90.9	19.14	13.53	12.27
T_4	178.8	133.8	217	2.23	869	90.6	19.35	13.69	12.42
T_5	196.1	151.4	254	2.37	878	95.1	19.70	14.15	13.46
T_6	212.1	155.1	255	2.01	916	99.0	19.29	13.68	13.53
T_7	175.1	138.3	249	2.21	749	86.2	19.09	13.62	11.73
T_8	184.9	147.7	251	2.17	870	89.1	19.30	13.74	12.27
T_9	210.8	153.3	250	2.32	904	95.5	19.35	13.69	13.11
CD (5%)	24.6	13.7	NS	NS	7	10.2	NS	NS	1.77

Table 3c: Economics of sugarcane Plant 2014-15, Ratoon 2015-16 and 2016-17

Treatments	Gross Returns (Rs/ha)				Net returns (Rs/ha)			
	Plant (2014-15)	Ratoon I (2015-16)	Ratoon II (2016-17)	Mean	Plant (2014-15)	Ratoon I (2015-16)	Ratoon II (2016-17)	Mean
T_1	207205	225421	251330	227985	66224	135071	174755	125350
T_2	225733	236363	269912	244003	82367	143813	190537	138906
T_3	259083	253247	286290	266207	112587	158697	204965	158750
T_4	257539	263877	285345	268920	109883	167852	203470	160402
T_5	280390	281072	299517	286993	129999	182347	215192	175846
T_6	292742	294829	311801	299791	140921	194354	225851	187042
T_7	245496	245431	271487	254138	99515	151581	191412	147503
T_8	274523	256373	280620	270505	125307	160323	198495	161375
T_9	283787	270130	300777	284898	133391	172330	216402	174041

AS-69 : 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

Year of Start **:** 2015-16

Year of Completion **:** 2017-18

Treatments (8) **:**

1. Conventional planting/ Farmers' practice (3-bud setts)
2. Planting of setts after overnight soaking in water
3. Planting of setts after overnight soaking in 50 ppm ethrel solution
4. Planting of setts after overnight soaking in 100 ppm ethrel solution
5. T1+GA_3 spray (35 ppm) at 90, 120 and 150 DAP
6. T2+ GA_3 spray (35 ppm) at 90, 120 and 150 DAP
7. T3 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP
8. T4 + GA_3 (35 ppm) spray at 90, 120 and 150 DAP

Design **:** Randomized Block Design, **Variety:** Co 118

Replication **:** 3

Results: Germination of sugarcane was better with treating the seed by 50 & 100 ppm etheral solution than no treatment (Table 4a). Etheral helped in advancing the germination process helping in higher germination at early stage. The highest cane yield (107.6 t/ha) was observed in T8 (planting of setts after overnight soaking in 100 ppm ethrel solution and GA_3 (35 ppm) spray at 90, 120 and 150 DAP) which was significantly better than T1, T2 and T5 (Table 4b).

Table 4 a: Germination (%) of sugarcane during 2016-17 under various treatments

Treatments	20 DAP	30 DAP	40 DAP	50 DAP	60 DAP
T_1	2.26	21.03	26.77	28.63	32.27
T_2	21.03	33.52	41.10	45.50	46.37
T_3	37.43	40.65	45.90	51.07	51.77
T_4	33.67	37.19	45.60	48.63	51.07
T_5	2.07	22.62	28.73	30.97	31.93
T_6	20.80	38.17	42.17	45.83	47.20
T_7	27.80	41.52	46.93	51.90	52.97
T_8	33.03	36.15	43.83	49.13	49.47
CD (5%)	5.18	5.94	5.4	5.62	6.05

Table 4 b: Growth, yield and quality of Sugarcane during 2016-17 under various treatments

Treatments	No. of Shoots 000/ha	NMC 000/ha	Cane length (cm)	Cane diameter (cm)	Single cane wt. (g)	Cane yield (t/ha)	Sucrose (%)	CCS%	CCS t/ha
T_1	112.2	73.6	234	2.63	1699	83.1	18.02	12.43	10.32
T_2	123.6	83.6	252	2.67	1737	93.3	18.08	12.64	11.77
T_3	129.4	90.8	258	2.80	1796	99.6	18.00	12.70	12.64
T_4	127.5	92.8	252	2.91	1850	104.0	17.55	12.39	12.87
T_5	114.4	80.6	255	2.85	1799	89.3	17.71	12.50	11.18
T_6	138.6	87.2	259	2.90	1873	97.8	18.07	12.72	12.46
T_7	143.9	97.5	263	2.82	1834	101.8	17.92	12.33	12.53
T_8	142.5	98.6	265	2.91	1849	107.6	18.19	12.66	13.62
CD (5%)	21.1	8.5	NS	NS	NS	13.6	NS	NS	2.11

As 70: Scheduling irrigation with mulch under different sugarcane planting methods

Year of Start: 2016-17
Objective: To enhance crop and water productivity in sugarcane
Treatments:

(i) (Main plots: 4, Combination of planting methods and mulch levels)

P1: Conventional flat planting (at 75 cm row spacing) with mulching @ 6.00 t/ha
P2: Conventional flat planting (at 75 cm row spacing) without mulch
P3: Paired row trench planting (at 30: 120 cm row spacing) with mulching @ 6.00 t/ha
P4: Paired row trench planting (at 30: 120 cm row spacing) without mulch

(ii) **Irrigation schedule (IW/CPE)** : 3 (Sub plots)
I1: 0.60
I2: 0.80
I3: 1.00

Irrigation water = 7.5 cm
Sugarcane Variety: Co 118
DOP: 05.03.2016

Results: Although no significant effect of planting method was observed on growth characters of sugarcane but numerically paired row trench planting was better in germination, number of shoots and millable canes (Table 5a). Cane weight was better in flat planting.

Among the planting methods paired row trench planting with trash mulching recorded maximum (106.0 t/ha) and significantly higher cane yield than all methods of planting (Table 5b). Trash mulching resulted in significantly higher cane yield than without trash mulching irrespective of planting methods. Cane yield increased successively and significantly with increase in irrigation water application from 0.6 to 1.0 IW/CPE. Interaction effects between method of planting and irrigation schedules revealed maximum cane productivity was obtained from paired row planting with mulching and irrigation at 1.0 IW/CPE, which was statistically at par with paired row planting with mulching and irrigation at 0.8 IW/CPE and paired row planting without mulching and irrigation at 1.0 IW/CPE but significantly higher than all other combinations. Thus, data manifested that trash mulching resulted in saving of 20 % evaporation equivalent and 26.6 % irrigation water input than no mulching in paired row trench planting.

Apparent water productivity (AWP) and Total water productivity (TWP) were significantly higher in paired row trench planting than conventional planting because of 52.5 cm less irrigation water input irrespective of mulching (Table 5c). Among irrigation schedules AWP decreased successively with increase in water input from 0.6 to 1.0 IW/CPE, differences were statistically at par between 0.8 and 0.6 IW/CPE.

Table 5 a: Growth, yield and quality of sugarcane during 2016-17 under varying planting methods and irrigation schedule

Treatments	Germination %	No. of Shoots 000/ha	NMC 000/ha	Cane length (cm)	Cane diameter (cm)	Single cane wt. (g)	Sucrose (%)	CCS%	CCS t/ha
Planting methods									
P1	40.1	125.4	99.2	245	3.01	1813	17.27	12.11	11.73
P2	42.1	118.9	95.9	232	2.90	1642	17.63	12.31	10.86
P3	45.8	130.6	102.2	243	2.88	1621	18.00	12.59	13.37
P4	49.6	127.1	97.2	235	2.73	1414	17.79	12.45	11.68
CD (5%)	NS	NS	NS	NS	NS	204	NS	NS	1.31
Irrigation schedule (IW/CPE)									
I1: 0.60	45.6	119.6	94.6	221	2.90	1558	17.63	12.34	10.56
I2: 0.80	44.8	127.5	99.7	243	2.86	1610	17.84	12.48	12.27
I3: 1.00	42.7	129.4	101.7	254	2.88	1708	17.54	12.28	12.91
CD (5%)	NS	6.7	4.2	9	NS	NS	NS	NS	0.94

P1: Conventional flat planting (at 75 cm row spacing) with mulching @ 6.00 t/ha, **P2:** Conventional flat planting (at 75 cm row spacing) without mulch, **P3:** Paired row trench planting (at 30 : 120 cm row spacing) with mulching @ 6.00 t/ha, **P4:** Paired row trench planting (at 30 : 120 cm row spacing) without mulch

Table 5b: Cane Yield and water applied under varying methods of planting (MOP) and irrigation schedule (IS)

Planting methods/ Irrigation schedule (IW/CPE)	Cane Yield (t/ha)				Irrigation water input(cm)				Total water input (cm)#			
	I1 (0.6)	I2 (0.8)	I3 (1.0)	Mean	I1 (0.6)	I2 (0.8)	I3 (1.0)	Mean	I1 (0.6)	I2 (0.8)	I3 (1.0)	Mean
P1	95.8	96.3	98.3	96.8	67.5	82.5	112.5	87.5	113.6	128.6	158.6	133.6
P2	71.8	92.8	100.3	88.3	67.5	82.5	112.5	87.5	113.6	128.6	158.6	133.6
P3	96.0	110.3	111.7	106.0	27.0	33.0	45.0	35.0	73.1	79.1	91.1	81.1
P4	79.3	93.1	109.5	94.0	27.0	33.0	45.0	35.0	73.1	79.1	91.1	81.1
Mean	85.7	98.1	105.0		47.3	57.8	78.8		93.4	103.9	124.9	
LSD (p=0.05	MOP=7.1; IS=6.1; Interaction=12.1											

 # Irrigation water input + total rainfall i.e. 46.1 cm

P1: Conventional flat planting (at 75 cm row spacing) with mulching @ 6.00 t/ha, **P2:** Conventional flat planting (at 75 cm row spacing) without mulch, **P3:** Paired row trench planting (at 30: 120 cm row spacing) with mulching @ 6.00 t/ha, **P4:** Paired row trench planting (at 30 : 120 cm row spacing) without mulch

Table 5c: Water productivity under varying methods of planting (MOP) and irrigation schedule (IS)

Planting methods/ Irrigation schedule (IW/CPE)	Apparent water productivity (kg/m^3)				Total water productivity (kg/m^3)			
	I1 (0.6)	I2 (0.8)	I3 (1.0)	Mean	I1 (0.6)	I2 (0.8)	I3 (1.0)	Mean
P1	14.2	11.7	8.7	11.5	8.4	7.5	6.2	7.4
P2	10.6	11.3	8.9	10.3	6.3	7.2	6.3	6.6
P3	35.6	33.4	24.8	31.3	13.1	13.9	12.3	13.2
P4	29.4	28.2	24.3	27.3	10.8	11.8	12	11.5
Mean	22.4	21.1	16.7		9.7	10.1	9.2	
LSD (p=0.05)	MOP=1.4; IS=1.6; Interaction=3.1				MOP=0.7; IS=0.7; Interaction=1.4			

P1: Conventional flat planting (at 75 cm row spacing) with mulching @ 6.00 t/ha, **P2:** Conventional flat planting (at 75 cm row spacing) without mulch, **P3:** Paired row trench planting (at 30 : 120 cm row spacing) with mulching @ 6.00 t/ha, **P4:** Paired row trench planting (at 30 : 120 cm row spacing) without mulch

AS 71: Carbon sequestration assessment in sugarcane based cropping system

Objective : To improve the total soil organic carbon build-up and sustain crop yields

Year of start : 2016 – 2017
Locations : All centers
Duration : One cycle of 3 years crop rotation

Treatments (Cropping system) :

T_1 : Rice - Wheat – Rice – Wheat (residue retention without *Trichoderma*)
T_2 : Rice - Wheat – Rice – Wheat (residue retention with *Trichoderma*)
T_3 : Sugarcane – Ratoon (trash mulching without *Trichoderma*) - Wheat
T_4 : Sugarcane – Ratoon (trash removal without *Trichoderma*) - Wheat
T_5 : Sugarcane – Ratoon (trash mulching with *Trichoderma*) - Wheat
T_6 : Sugarcane – Ratoon - Wheat (trash incorporation through rotavator and *Trichoderma* incorporation before sowing of wheat)
T_7 : Sugarcane – Ratoon- Wheat (Zero tilled) without *Trichoderma*
T_8 : Sugarcane – Ratoon-Wheat (Zero tilled) with *Trichoderma*

Sugarcane
Variety: CoJ 88
Date of Planting: 22.03.2016 **Date of harvesting:** 16.03.2017

Rice
Variety: PR 124
Date of Transplanting: 24.06.2016 **Date of harvesting:** 19.10.2016

Wheat
Variety: PBW 725
Date of sowing: 11.11.2016 **Date of harvesting:** 22.04.2017

Initial Soil Status: pH: 8.6, EC: 0.30 dsm^{-1}, OC= 0.30%, P =13.0 kg/ha, K= 750 kg/ha

Results: The experiment was started with planting of sugarcane during 2016 and the effect of various treatments has been applied and their effect will be studied in ratoon crops. The yield of rice and wheat was at par in both the treatments. Sugarcane yield from plant crop was also at par in all treatments.

Table 6: Growth, yield and quality of sugarcane during 2016-17 under various treatments

Genotypes	Germination %	No. of Shoots 000/ha	NMC 000/ha	Cane length (cm)	Cane diameter (cm)	Single cane wt. (g)	Cane yield (t/ha)	Sucrose (%)	CCS %	CCS t/ha
T1	Rice: 7.8 t/ha Wheat: 5.6 t/ha									
T2	Rice: 7.9 t/ha Wheat: 5.7 t/ha									
T3	29.1	151.2	119.3	229	2.73	1229	91.1	18.24	12.85	11.7
T4	29	154.3	118.5	219	2.78	1326	94.1	18.15	12.76	12.0
T5	29.5	152.4	119.1	229	2.74	1278	93.7	18.35	12.82	11.9
T6	29.7	154.6	122.6	238	2.68	1220	94.1	18.11	12.7	11.9
T7	29.5	153.7	118.9	229	2.59	1311	94.1	18.44	12.96	12.2
T8	29.3	149.1	121.5	224	2.68	1193	95.2	18.5	12.92	12.3
CD (5%)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

T_1 : Rice - Wheat – Rice – Wheat (residue retention without *Trichoderma*), T_2 : Rice - Wheat – Rice – Wheat (residue retention with *Trichoderma*), T_3 : Sugarcane – Ratoon (trash mulching without *Trichoderma*) – Wheat, T_4 : Sugarcane – Ratoon (trash removal without *Trichoderma*) - Wheat, T_5 : Sugarcane – Ratoon (trash mulching with *Trichoderma*) - Wheat, T_6 : Sugarcane – Ratoon - Wheat (trash incorporation through rotavator and *Trichoderma* incorporation before sowing of wheat), T_7 : Sugarcane – Ratoon- Wheat (Zero tilled) without *Trichoderma* , T_8 : Sugarcane – Ratoon-Wheat (Zero tilled) with *Trichoderma*

AS 72 (Early): Agronomic performance of elite sugarcane genotypes

Objective : To assess the performance of promising sugarcane genotypes of Advanced Varietal Trial (AVT)

Year of start : 2016-2017

Planting time : 18.02.2016

: Genotypes (6) : CoH 11262, CoLk 11201, CoLk 11202, CoLk 11203, CoJ 64 and Co 0238

Agronomy : **Spacing:** 120 cm
Fertilizer levels: 125% of the recommended dose of NPK
Recommended N: 150 kg/ha

Design : RBD

Replication : 3

Plot size : 5 rows of 5 m

Initial Soil Status: pH: 8.1, EC: 0.43 dsm^{-1}, OC= 0.51%, P =26.2 kg/ha, K= 550 kg/ha

Results: The experiment was conducted by planting six genotypes at 120 cm spacing and by applying 125% of recommended N. The highest cane yield was of CoH 11262 (83.6 t/ha) which was at par with other genotypes except CoLk 11201 and CoLk 11202 (Table 7). Same was the case in sugar yield.

Conclusion: CoH 11262 was found promising in cane and sugar yield.

Table 7: Growth, yield and quality of sugarcane genotypes (Early) during 2016-17 under high N and wider row spacing conditions

Genotypes	Germination %	No. of Shoots 000/ha	NMC 000/ha	Cane length (cm)	Cane diameter (cm)	Single cane wt. (g)	Cane yield (t/ha)	Sucrose (%)	CCS %	CCS t/ha
CoH 11262	35.0	114.1	79.3	229	3.08	1775	83.6	16.15	11.44	9.54
CoLk 11201	51.8	96.3	58.3	196	3.09	1486	54.2	17.04	12.06	6.53
CoLk 11202	46.9	85.7	67.6	211	3.03	1657	71.7	16.72	11.73	8.41
CoLk 11203	45.2	93.1	81.8	234	2.37	1153	78.9	17.21	11.89	9.37
CoJ 64	47.8	108.9	88.9	233	2.69	1308	78.6	16.52	11.73	9.21
Co 0238	49.8	166.7	59.4	212	3.16	1704	80.6	16.47	11.53	9.29
CD (5%)	7.2	13.3	10.6	26	0.21	341	8.4	NS	NS	0.77

AS 72 (Midlate): Agronomic performance of elite sugarcane genotypes

Objective : To assess the performance of promising sugarcane genotypes of Advanced Varietal Trial (AVT)

Year of start : 2016-2017

Planting time : 18.02.2016

Treatments :

Genotypes (9): Co 11027, CoH 11263, CoLk 11204, CoLk 11206, CoPb 11214, CoS 11232, CoS 767, CoS 8436, CoPant 97222, CoPb 10181

Agronomy : **Spacing:** 120 cm
Fertilizer levels: 125% of the recommended dose of NPK
Recommended N: 150 kg/ha

Design : RBD

Replication : 3

Plot size : 5 rows of 5 m

Initial Soil Status: pH: 8.1, EC: 0.43 dsm^{-1}, OC= 0.51%, P =26.2 kg/ha, K= 550 kg/ha

Results: The experiment was conducted by planting nine genotypes at 120 cm spacing and by applying 125% of recommended N. The highest cane yield was of CoPant 97222 (116.1 t/ha) which was significantly superior to all other genotypes. Amongst test entries the highest cane yield was of CoPb 11214 (98.3 t/ha) which was at par with at par with CoLk 11206 (91.7 t/ha) (Table 8). Sugar yield was higher in CoLk 11206 but was at par with CoPb 11214.

Conclusion: CoPb 11214 and CoLk 11206 were found promising in cane and sugar yield.

Table 8: Growth, yield and quality of sugarcane genotypes (Midlate) during 2016-17 under high N and wider row spacing conditions

Genotypes	Germination %	No. of Shoots 000/ha	NMC 000/ha	Cane length (cm)	Cane diameter (cm)	Single cane wt. (g)	Cane yield (t/ha)	Sucrose (%)	CCS%	CCS t/ha
Co 11027	26.8	80.5	63.9	220	2.63	1279	72.8	15.48	10.66	7.8
CoH 11263	24.9	111.9	80.2	174	2.96	1164	76.4	15.53	10.87	8.3
CoLk 11204	30.3	91.1	76.1	190	2.75	1061	65.3	16.99	12.1	7.9
CoLK 11206	27.3	85.9	63.9	234	2.77	1423	91.7	15.82	11.07	10.2
CoPb 11214	26.3	135.1	98.3	205	2.60	1050	98.3	13.45	9.27	9.1
CoS 11232	26.9	92.4	95.6	222	2.43	1046	79.2	14.7	10.45	8.3
CoS 767	28.8	129.4	95.4	243	2.68	1391	105.6	15.02	10.39	10.9
CoS 8436	30.5	97.9	84.1	162	3.1	996	78.1	15.43	10.42	8.1
CoPant 97222	32.9	140.7	98.1	218	3.01	1615	116.1	15.21	10.68	12.4
CD (5%)	NS	34.2	18.9	32	0.26	375	9.7	1.22	1.01	1.6