KERALA AGRICULTURAL UNIVERSITY

AICRP ON SUGARCANE

CROP PRODUCTION
ANNUAL REPORT
2016-2017

Sugarcane Research Station, Kallunkal
Thiruvalla, Kerala-689102

KERALA AGRICULTURAL UNIVERSITY
SUGARCANE RESEARCH STATION, THIRUVALLA
AICRP on Sugarcane -Crop Production

Annual Report for 2016--17

1.	Project No.	AS -72
2.	Title	**Agronomic performance of elite sugarcane genotypes**
3.	Objectives	To assess the performance of promising sugarcane genotypes of advanced varietal trial (AVT)
4.	Details of the treatment/ technical programme (in bullet form)	**Treatments** **1. Genotypes** **Early maturing varieties(8)** Co10004,Co 10005,Co 10006,Co 10024,Co 10026,Co 10027,CoT 10366 and CoT 10367 **Zonal check(3):** Co 85004,Co 94008 and CoC 671 **Midlate maturing varieties(11)** Co09009,Co 10015,Co 10017,Co 10031,Co 10033,CoM10083,CoT10368,CoT 10369,CoVc 10061,PI 10131 and PI 10132 **Zonal check(2): Co 86032 and Co99004** **2. Agronomy** **Spacing:**Wider spacing for all the entries 1.120 cm for North West,North Central, North East and east Coast zones 2. 150 cm for Peninsular Zone **Fertilizer level** 125% of the recommended dose of NPK for the zone
5.	Design	RBD
6.	Replications	2
7.	Plot size	4 rows of 6 m length
8.	Climatic parameters	Total rainfall(mm) - 1744.12 mm Max. temperature(^{0}c) - 31.93 Min. temperature(^{0}c) - 24.81

9. Observations on soil health

Parameter	Initial	After harvest
Bulk density(g $cc^{-1)}$	1.43	1.40
Organic carbon (%)	1.82	1.96
Available N (kg/ha)	346.30	360.18
Available P (kg/ha)	102.72	110.95
Available K (kg/ha)	169.12	130.51
Soil pH	4.6	4.5
EC (ds m^{-1})	0.12	0.12

10. Summary of results:

The experiment to evaluate the performance of elite sugarcane genotypes was planted on 20.01.2016 and was harvested on 12.01.2017.

In the case of early varieties, the germination % and tiller count were influenced significantly by the various genotypes and the highest values for the said parameters were recorded by CoC 671 followed by Co 10005.

The treatment variation due to various genotypes were significant for cane length, cane girth, single cane weight, MCC, cane yield and sugar yield and COC 671 recorded the highest value for the said parameters (255.52 cm, 9.33cm, 1.62kg, 74750 nos/ha, 85.21t/ha, 11.40 t/ha respectively) followed by Co 10005 (244.70 cm, 9.14 cm,1.53kg, 60750 nos/ha,72.00t/ha respectively). The highest BC ratio of 1.33 was also recorded by CoC 671.

With regard to midlate varieties, both the growth and yield parameters were influenced significantly by the genotypes and the highest values for cane length, cane girth, single cane weight, MCC, cane yield and sugar yield were recorded by Co10015 (250.90 cm, 9.75 cm, 1.59 kg, 70120 nos./ha, 87.64 t/ha and11.74 t/ha) followed by Co99004(248.61cm, 9.50 cm, 1.57 kg, 69350 nos./ha, 62.25 t/ha and 9.97t/ha respectively) The highest BC ratio of 1.35 was also recorded by Co10015.

Growth, juice quality and yield as influenced by varieties (early)

Treatments	Germination (%)		Tiller count (000/ha)		Cane length (cm)	Cane girth (cm)	Single cane weight (kg)	MCC (`000/ha)	SMT Brix (%)	CCS (%)	Cane yield (t/ha)	Sugar yield (t/ha)	BC ratio
	30 DAP	45 DAP	120 DAP	150 DAP									
Co 10004	37.64	40.15	50.14	46.28	232.91	8.35	1.35	36.80	20.0	12.51	43.00	5.38	0.75
Co 10005	55.55	58.16	82.10	78.06	244.70	9.14	1.53	60.75	19.6	12.26	72.00	8.83	1.22
Co 10006	42.30	45.25	66.21	62.51	242.60	8.97	1.48	56.91	17.0	10.47	58.36	6.11	1.10
Co 10024	41.62	44.00	60.33	57.20	240.72	8.74	1.45	52.24	18.0	11.12	53.52	5.95	1.06
Co 10026	52.18	55.03	78.94	75.21	249.87	9.25	1.57	69.36	20.7	12.80	70.13	8.97	1.20
Co 10027	41.50	44.56	54.00	48.93	239.19	8.52	1.42	44.79	20.0	12.48	45.87	5.72	0.92
CoT 10366	40.08	42.20	55.94	51.78	236.05	8.60	1.40	47.66	18.40	11.42	48.50	5.54	0.96
CoT 10367	31.90	34.72	47.25	44.12	228.84	8.20	1.30	34.70	21.3	13.00	40.04	5.20	0.71
Co 85004	38.70	41.18	51.78	48.00	234.63	8.43	1.35	43.50	18.2	11.23	44.85	5.03	0.94
Co 94008	52.41	55.00	78.92	75.04	242.57	9.10	1.51	58.43	17.6	13.10	70.09	9.18	1.20
CoC 671	57.22	60.00	92.00	88.74	255.12	9.33	1.62	74.75	21.5	13.38	85.21	11.40	1.33
CD (0.05)	**3.51**	**4.18S**	**4.60**	**4.84**	**11.07***	**0.22**	**0.20**	**11.41***	**NS**	**NS**	**10.18***	0.80	NS

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Growth, juice quality and yield as influenced by varieties (midlate)

Treatments	Germination (%)		Tiller count (000/ha)		Cane length (cm)	Cane girth (cm)	Single cane weight (kg)	MCC (`000/ha)	SMT Brix (%)	CCS (%)	Cane yield (t/ha)	Sugar yield (t/ha)	BC ratio
	30 DAP	45 DAP	120 DAP	150 DAP									
Co 09009	51.50	55.74	75.90	72.05	242.55	9.16	1.54	65.344	21.30	13.41	68.75	9.22	-
Co 10015	58.75	62.15	93.71	90.84	250.90	9.75	1.59	70.12	20.35	12.75	87.64	11.74	-
Co 10017	30.68	35.22	49.08	45.21	227.00	8.30	1.38	42.24	20.45	12.84	41.12	5.28	-
Co 10031	41.10	44.19	54.12	50.74	227.18	8.45	1.42	45.75	20.45	12.86	47.64	6.13	-
Co 10033	50.09	53.00	68.75	65.66	238.70	9.10	1.52	60.03	19.35	12.15	62.37	7.58	-
CoM 10083	47.00	50.50	65.31	62.00	232.86	8.95	1.49	57.71	21.10	13.24	58.75	7.78	-
CoT 10368	46.21	49.64	62.80	59.72	230.57	8.90	1.47	56.00	19.60	12.29	56.25	6.91	-
CoT 10369	49.18	52.00	67.14	64.61	236.18	9.00	1.51	59.50	21.85	13.70	61.12	8.37	-
CoVC 10061	50.14	53.70	71.24	68.08	240.74	9.05	1.53	61.77	20.95	13.16	64.17	8.45	1.21
PI 10131	42.05	45.60	54.09	51.50	228.52	8.50	1.44	46.10	21.60	13.55	48.34	6.55	1.23
PI 10132	31.44	34.15	45.50	42.34	226.70	8.20	1.35	40.19	21.95	13.65	39.17	5.35	1.25
Co 86032	48.25	51.35	67.54	64.05	235.95	8.98	1.50	60.08	20.35	12.78	60.42	7.72	1.35
Co 99004	55.55	58.56	89.00	85.61	248.61	9.50	1.57	69.75	19.35	12.13	82.25	9.97	1.38
CD (0.05)	**3.65**	**4.25**	**5.10**	**4.92**	**10.34***	**0.18**	**0.20**	**9.00***	**NS**	**NS**	**9.75***	**0.65**	**NS**

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Annual Report for 2016-17

1.	Project No.	AS 68
2.	Title	**Impact of integrated application of organics and inorganics in improving soil health and sugarcane productivity**
3.	Objectives	To develop nutrient management strategy for sustaining soil health and sugarcane production.
4.	Details of the treatment/ technical programme (in bullet form)	Treatments (Sugarcane -plant crop) T_1 - No organic + 50% RDF T_2 - No organic + 100% RDF T_3 - No organic + soil test based recommendation T_4 - Application of FYM/Compost @ 20 tonnes / ha + 50% RDF (inorganic source) T_5 - Application of FYM/Compost @ 20 tonnes / ha + 100% RDF (inorganic source) T_6 - Application of FYM/Compost @ 20 tonnes / ha + in organic nutrient application based on soil test (rating chart) T_7 - Application of FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter* + *PSB*) + 50% RDF T_8 - Application of FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter* + *PSB*) + 100% RDF T_9 - Application of FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter* + *PSB*) + soil test basis
5.	Design	RBD
6.	Replications	3
7.	Plot size	$6x5.4m^2$
8.	Climatic parameters	Total rainfall(mm) - 1744.12 Max.temperature(^{0}c) - 31.93 Min. temperature(^{0}c) - 24.81

9. Observations on soil health

Parameter	Initial	After harvest	
Bulk density(g $cc^{-1)}$	1.43	1.40	
Organic carbon (%)	1.82	1.96	
Available N (kg/ha)	326.32	355.38	
Available P (kg/ha)	102.12	110.51	
Available K (kg/ha)	218.67	227.51	
Soil pH	4.6	4.5	
EC (ds m^{-1})	0.12	0.12	

10. Summary of results

The experiment to study the impact of integrated application of organics an inorganics in improving soil health and sugarcane productivity (plant crop) was planted on 20.1.2016 and harvested on12.1.2017. The ratoon crop of the previous year was also harvested on the same date itself.

The germination and tiller count remained unaffected due to various treatments tried.

The variation due to different treatments were significant for growth and yield parameters. In plant crop, among the various treatments, T_8 (FYM/compost @ 10 t/ha + biofertilizer(Azotobacter/Acetobacter+PSB) +100 RDF) recorded significantly higher values for cane length(255.61 cm), MCC(91000nos./ha) etc and resulted in maximum yield(108.50 t/ha). Brix % and sugar yield also followed the same trend with significantly higher values for sugar yield (12.42t/ha) for the very same treatment. It was followed by T_6(FYM/Compost @ 20 t/ha + inorganic nutrient application based on soil test (rating chart).

With regard to ratoon crop also, the same trend was visible where T_8 itself recorded the highest values for cane length(262.07 cm), MCC(93240 nos/ha), cane yield (111.10 t/ha) and sugar yield (12.74 t/ha).

Slight variation in the soil fertility parameters were noticed before and after the conduct of the trial especially regarding the status of major nutrients where higher values were recorded in the soil after the conduct of the experiment.

The nutrient composition of the farm yard manure used was 1.0:0.5:1.0 % N, P_2O_5 and K_2O. The treatment T_8 recorded the highest BC ratio(1.38).

Growth, cane yield and juice quality as influenced by different treatments(plant crop).

Treatments		Germination (%)		Tiller count (000/ha)		Cane length (cm)	Cane girth (cm)	Single cane weight (kg)	MCC ('000/ ha)	Brix (%)	CCS (%)	Cane yield (t/ha)	Sugar yield (t/ha)	BC ratio
		30 DAP	45 DAP	120 DAP	150 DAP									
T_1	No organic + 50% RDF	57.65	61.71	82.26	74.10	188.22	8.35	1.25	65.12	17.40	8.60	70.15	6.03	0.80
T_2	No organic + 100% RDF	60.02	64.01	96.88	92.78	230.87	9.55	1.49	84.57	18.30	10.10	97.90	9.89	1.25
T_3	No organic + soil test based recommendation	61.35	65.44	97.75	89.34	228.50	9.53	1.48	83.96	18.00	10.00	90.62	9.06	1.26
T_4	FYM/Compost @ 20 tonnes / ha + 50% RDF (inorganic source)	60.86	64.80	98.04	91.25	233.48	9.70	1.50	85.84	18.60	10.20	99.27	10.13	1.15
T_5	FYM/Compost @ 20 tonnes / ha + 100% RDF (inorganic source)	59.90	62.60	94.51	86.25	226.95	9.50	1.45	81.25	18.20	9.89	85.53	8.46	1.26
T_6	FYM/Compost @ 20 tonnes / ha + in organic nutrient application based on soil test (rating chart)	62.24	66.65	103.08	94.52	236.75	9.80	1.56	87.12	19.10	10.25	100.06	10.26	1.20
T_7	FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter + PSB*) + 50% RDF	58.37	60.92	85.60	76.22	225.34	9.30	1.42	79.73	17.90	9.80	74.01	7.25	1.18
T_8	FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter + PSB*) + 100% RDF	64.10	65.51	108.00	97.65	255.61	10.10	1.67	91.00	19.80	11.45	108.50	12.42	1.38
T_9	FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter + PSB*) + soil test basis	58.80	62.34	87.81	83.20	225.66	9.40	1. 40	77.98	18.10	9.85	78.644	7.74	1.23
CD (0.05)		**NS**	**NS**	**NS**	**NS**	**7.86***	**0.30***	**0.18***	**6.24***	**NS**	**0.20***	**8.07***	**0.50**	**NS**

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Growth, cane yield and juice quality as influenced by different treatments(ratoon)

Treatments		Germination (%)		Tiller count (000/ha)		Cane length (cm)	Cane girth (cm)	Single cane weight (kg)	MCC ('000/ ha)	Brix (%)	CCS (%)	Cane yield (t/ha)	Sugar yield (t/ha)	BC ratio
		30 DAP	45 DAP	120 DAP	150 DAP									
T_1	No organic + 50% RDF	58.71	63.04	84.18	76.25	191.06	8.40	1.30	68.74	17.40	8.63	72.00	6.21	0.80
T_2	No organic + 100% RDF	62.14	65.92	98.00	94.16	233.51	9.60	1.50	86.00	18.40	10.17	99.27	10.04	1.25
T_3	No organic + soil test based recommendation	63.40	67.70	99.00	91.25	230.72	9.55	1.49	84.98	18.00	10.03	92.51	9.28	1.26
T_4	FYM/Compost @ 20 tonnes / ha + 50% RDF (inorganic source)	62.64	66.75	99.91	93.00	237.13	9.80	1.52	88.11	18.60	10.25	100.62	10.31	1.15
T_5	FYM/Compost @ 20 tonnes / ha + 100% RDF (inorganic source)	61.45	64.52	96.30	88.43	229.92	9.52	1.47	83.56	18.30	9.93	86.04	8.54	1.26
T_6	FYM/Compost @ 20 tonnes / ha + in organic nutrient application based on soil test (rating chart)	64.15	68.50	105.60	96.33	240.24	9.90	1.60	90.05	19.20	10.30	102.25	10.53	1.20
T_7	FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter* + *PSB*) + 50% RDF	60.25	62.95	87.41	78.30	227.55	9.40	1.42	82.83	18.00	9.85	76.34	7.52	1.18
T_8	FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter* + *PSB*) + 100% RDF	66.25	71.20	110.16	100.10	262.07	10.20	1.70	93.24	19.90	11.47	111.10	12.74	1.38
T_9	FYM/Compost @ 10 tonnes / ha + biofertilizer (*Azotobacter/ Acetobacter* + *PSB*) + soil test basis	60.60	63.55	90.04	85.24	228.80	9.44	1. 43	80.17	18.00	9.90	81.74	8.09	1.23
CD (0.05)		**NS**	**NS**	**NS**	**NS**	**8.14***	**0.38***	**0.12***	**9.08***	**NS**	**0.15***	**8.50***	**0.40**	**NS**

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Annual Report for 2016-17

1. Project No. — AS 69

2. Title — **Use of plant growth regulators (PGRs) for enhanced yield and quality of sugarcane**

3. Objectives
   (i) To accelerate rate and extent of sugarcane germination through the use of PGRs.
   (ii) To assess the effect of PGRs on sugarcane growth, yield and juice quality.

4. Details of the treatment/ technical programme (in bullet form)
   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 spray (35ppm) at 90,120 and 150 DAP
   T_6 : T_2 + GA_3 spray (35ppm) at 90,120 and 150 DAP
   T_7 : T_3 + GA_3 spray (35ppm) at 90,120 and 150 DAP
   T_8 : T_4 + GA_3 spray (35ppm) at 90,120 and 150 DAP

5. Design — RBD

6. Replications — 3

7. Plot size — $6x5.4m^2$

8. Climatic parameters
   Total rainfall(mm) - 1744.12
   Max. temperature(^{0}c) - 31.93
   Min. temperature(^{0}c) - 24.81

9. Observations on soil health

Parameter	Initial	After harvest
Bulk density(g $cc^{-1)}$	1.43	1.40
Organic carbon (%)	1.82	1.96
Available N (kg/ha)	376.32	390.38
Available P (kg/ha)	112.72	117.94
Available K (kg/ha)	169.12	130.51
Soil pH	4.6	4.5
EC(ds $m^{-1)}$	0.12	0.12

10. Summary of the results.

The experiment was conducted to study the effect of plant growth regulators on germination, growth, yield and juice quality of sugarcane. The crop was planted on 25.01.2016 and was harvested on 16.01.2017.

The results revealed that the different treatments have significantly influenced the germination percentage and tiller count.

The highest germination percentage and tiller population were recorded by T_8 (T_4 +GA_3 spray (35ppm) at 90,120 and 150 DAP) and the lowest value for the above parameters were recorded by T_2 (planting of setts after overnight soaking in water).

Maximum cane length (261.76 cm), MCC (9318 nos. / ha), cane yield (118.11 t/ha) etc were recorded T_8. Sugar yield also showed same trend and recorded significantly higher value (13.24 t/ha) for the very same treatment (T_8). There was some variation in the soil fertility parameters prior to and after the conduct of the trial. The highest BC ratio of 1.32 was also recorded by T_8.

Germination, cane yield and juice quality as influenced by plant growth regulators

Treatments		Germination (%)		Tiller count (000/ha)		Cane length (cm)	Cane girth (cm)	Single cane weight (kg)	MCC ('000/ha)	Brix (%)	CCS %	Cane yield (t/ha)	Sugar yield (t/ha)	BC ratio
		30 DAP	45 DAP	120 DAP	150 DAP									
T_1	Conventional planting/ Farmers' practice (3-bud setts).	54.84	60.15	92.00	86.01	241.88	9.54	1.50	69.11	17.6	9.88	91.15	9.01	1.20
T_2	Planting of setts after overnight soaking in water.	44.11	50.00	75.25	70.92	234.22	9.35	1.40	64.25	17.2	9.20	88.20	8.11	1.12
T_3	Planting of setts after overnight soaking in 50 ppm ethrel solution	56.50	59.92	96.25	90.28	239.40	9.40	1.47	66.34	17.5	9.80	90.04	8.82	1.19
T_4	Planting of setts after overnight soaking in 100 ppm ethrel solution	60.33	65.25	102.25	92.70	246.37	9.66	1.52	73.57	18.2	10.82	100.73	10.89	1.32
T_5	T_1 + GA_3 spray (35ppm) at 90,120 and 150 DAP	57.10	61.11	97.05	90.95	250.81	9.75	1.55	77.64	18.5	10.90	102.29	11.15	1.22
T_6	T_2 + GA_3 spray (35ppm) at 90,120 and 150 DAP	58.50	62.20	95.42	92.07	254.85	9.84	1.61	82.50	19.30	11.16	106.62	11.90	1.25
T_7	T_3 + GA_3 spray (35ppm) at 90,120 and 150 DAP	59.84	63.75	98.21	92.24	252.54	9.78	1.57	79.05	18.9	10.85	105.47	11.44	1.28
T_8	T_4 + GA_3 spray (35ppm) at 90,120 and 150 DAP	61.52	68.75	108.16	96.37	261.76	9.96	1.75	93.18	19.8	11.21	118.11	13.24	1.32
CD (0.05)		**1.75***	**2.05***	**3.30***	**2.65***	**6.83***	**0.11***	**0.15***	**9.25***	**NS**	**0.11**	**5.04***	**0.25***	**NS**

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1. Project No. — AS- 70

2. Title — **Scheduling irrigation with mulch under different sugarcane planting methods**

3. Objectives — To enhance crop and water productivity in sugarcane

4. Details of the treatment/ technical programme (in bullet form)

Treatment (A)

North West, North Central and North East Zones

Combination of planting methods and mulch practices

P_1: Conventional flat planting (75 cm row spacing) with organic mulching @ 6 t/ha (sugarcane trash/paddy straw/any other available crop residue)

P_2 : Conventional flat planting (75 cm row spacing) without mulch

P_3 : Paired row trench planting (30:120 cm row spacing) with organic mulching @ 6 t/ha

P_4 : Paired row trench planting (30:120 cm row spacing) without mulch

Peninsular, East Coast Zones

Combination of planting methods, green manure and mulch practices

P_1 : Furrow planting (120 cm row spacing) without mulching

P_2 : Furrow planting (120 cm row spacing) with green manure (dhaincha/sunnhemp/cowpea) sowing at 30 DAP, mulching at 75 DAP and earthing-up at 110 DAP

P_3 : Furrow planting (120 cm row spacing) with alternate skip furrow irrigation after earthing -up without mulching

P_4 : Furrow planting (120 cm row spacing) with alternate skip furrow irrigation after earthing=up+ green manure/ brown mulching

Treatment (B)

Irrigation schedule (IW/CPE)

I_1 : 0.60

I_2 : 0.80

I_3 : 1.00

Irrigation water depth : 7.5 cm

5. Design — Strip plot design

6. Replications — 3

7. Plot size — 6x8 m length

8. Climatic parameters

Total rainfall(mm) - 1744.12
Max. temperature(^{0}c) - 31.93
Min. temperature(^{0}c) - 24.81

9. Observations on soil health

Parameter	Initial	After harvest
Bulk density(g $cc^{-1)}$	1.43	1.40
Organic carbon (%)	1.82	1.96
Available N (kg/ha)	376.32	390.38
Available P (kg/ha)	112.72	117.94
Available K (kg/ha)	169.12	130.51
Soil pH	4.6	4.5
EC(ds $m^{-1)}$	0.12	0.12

10. Summary of results

The experiment with the objective of enhancing crop and water productivity in sugarcane was planted on 15.01.2016 and harvested on 10.01.2017.

There were no effect on germination % and tiller count due to various planting methods and irrigation schedule.

The treatment variation due to planting methods, green manure and mulch practices as well as irrigation schedule were significant for growth and yield parameters.

The growth and yield attributes recorded in P_4(furrow planting at 120 cm spacing with alternate skip furrow irrigation after earthing up+ green manure/brown mulching was significantly superior to other planting methods and mulch practices tried. The maximum cane length (251.44 cm), cane girth (10.00 cm), single cane weight (1.60 kg), MCC (85000 nos./ha), cane yield (105.42 t/ha),and sugar yield(11.59t/ha) were recorded by P_4. With regard to irrigation schedule, the highest value for cane length(253.15 cm), cane girth (10.10 cm), MCC (8702nos./ha), cane yield (108.50t/ha),and sugar yield(11.94t/ha) were recorded by I_3 (IW/CPE ratio -1.00)

The interaction effect was significant for cane length, MCC, cane yield and sugar yield and the maximum values were recorded by the treatment combination P_4I_3 (256.96 cm, 88250 nos, 110.21t/ha and 12.12 t/ha respectively).

There was slight variation in the fertility status of the soil before and after the conduct of the trial. Among the treatment combinations, the highest BC ratio of 1.38 was recorded by the treatment combination P_4I_3.

Germination, cane yield and juice quality as influenced by planting methods and irrigation schedule

Treatments	Germination (%)		Tiller count (000/ha)		Cane length (cm)	Cane girth (cm)	Single cane weight (kg)	MCC ('000/ha)	Brix (%)	CCS (%)	Cane yield (t/ha)	Sugar yield (t/ha)	BC ratio
	30 DAP	45 DAP	120 DAP	150 DAP									
P_1	51.58	54.65	80.64	76.32	244.30	9.80	1.48	76.83	18.8	10.0	96.19	9.62	-
P_2	49.34	52.71	77.51	73.08	240.65	9.70	1.40	72.47	18.2	9.8	90.50	8.88	-
P_3	53.18	57.60	86.30	82.18	247.92	9.90	1.52	81.24	19.0	10.5	100.78	10.58	-
P_4	55.75	61.03	90.25	86.12	251.44	10.00	1.60	85.00	19.3	11.0	105.42	11.59	-
CD	**NS**	**NS**	**NS**	**NS**	**2.40**	**0.13**	**NS**	**3.15**	**NS**	**NS**	**4.70**	**0.45**	**-**
I_1	52.33	56.66	82.40	78.90	248.91	9.90	1.52	78.71	19.0	9.9	95.65	9.47	-
I_2	55.40	58.55	87.09	83.84	250.74	10.00	1.57	82.33	19.2	10.2	102.10	10.41	-
I_3	57.64	62.87	91.18	87.23	253.15	10.10	1.61	87.02	19.4	11.0	108.50	11.94	-
CD	**NS**	**NS**	**NS**	**NS**	**1.35**	**0.06**	**NS**	**2.70**	**NS**	**NS**	**4.08**	**0.33**	**-**
P_1I_1	54.60	57.75	77.64	75.06	245.90	9.85	1.45	73.64	18.6	9.3	92.14	8.57	1.22
P_1I_2	55.12	58.10	78.90	75.92	246.84	9.88	1.47	74.80	18.6	9.3	93.75	8.72	1.24
P_1I_3	55.14	58.82	79.91	77.25	247.75	9.91	1.49	76.15	18.7	9.5	95.08	9.03	1.25
P_2I_1	50.18	53.25	75.25	73.50	241.34	9.73	1.41	72.50	18.3	8.9	88.25	7.85	1.18
P_2I_2	51.25	54.19	76.32	74.18	243.10	9.75	1.43	73.10	18.4	9.0	90.47	8.14	1.18
P_2I_3	52.31	55.10	77.55	75.30	244.31	9.78	1.44	73.50	18.4	9.1	91.02	8.28	1.20
$P3I_1$	57.22	61.96	80.91	78.54	248.83	9.98	1.50	76.90	18.7	9.7	95.81	9.29	1.26
P_3I_2	57.50	62.23	83.74	80.63	249.94	10.00	1.52	78.94	18.7	9.8	98.65	9.67	1.28
P_3I_3	57.70	62.51	85.81	82.05	250.87	10.02	1.54	80.75	18.8	10.0	100.73	10.07	1.30
P_4I_1	57.96	62.84	86.50	83.18	251.60	10.04	1.57	82.56	19.0	10.2	103.50	10.55	1.33
P_4I_2	58.24	63.01	89.41	86.30	253.75	10.08	1.60	85.40	19.3	10.5	106.34	11.16	1.35
P_4I_3	58.73	63.24	92.25	89.10	256.96	10.12	1.62	88.25	19.50	11.0	110.21	12.12	1.38
PxI(CD)	**NS**	**NS**	**NS**	**NS**	**4.14**	**NS**	**NS**	**5.03**	**NS**	**NS**	**6.13**	**1.03**	**NS**

Sd/-
Signature of the Principal Investigator

Sd/-
Signature of the Head of Station

KERALA AGRICULTURAL UNIVERSITY
SUGARCANE RESEARCH STATION, THIRUVALLA
AICRP on Sugarcane -Crop Production

Annual Report for 2016-17

1.	Project No.	AS- 71
2.	Title	**Carbon sequestration assessment in sugarcane based cropping system**
3.	Objectives	To improve the total soil organic carbon build-up and sustain crop yields
4.	Details of the treatment/ technical programme (in bullet form)(A)	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 **Peninsular and East Coast Zones** T_1 : Soybean-wheat/maize/toria T_2 : Sugarcane-ratoon-cowpea/urd bean/moong bean T_3-T_8 : Will be same as in North West and North Central Zones except wheat to be substituted by maize/toria/cowpea
5.	Design	RBD
6.	Replications	3
7.	Plot size	6 rows of 6 m length
8.	Climatic parameters	Total rainfall(mm) - 1744.12 Max. temperature(^{0}c) - 31.93 Min. temperature(^{0}c) - 24.81
9.	Observations on soil health	

10. Summary of results

The plant crop has been taken up during 2016-17 and subsequently treatment schedule for the ratoon crop as specified in the technical programme has been undertaken during 2017-18. Hence the results are awaited.

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