Submitted to Director

Through: Head, Division of Crop Production

I request that the enclosed Annual report of the experiments **AS 72 - Agronomic performance of elite sugarcane genotypes** and **Impact of integrated application of organics and inorganics in improving soil health and sugarcane productivity**may please be forwarded to Project Co-ordinator - Sugarcane, IISR, Lucknow - 226 002 as well as the PI.

(A. S.TAYADE)

Senior Scientist (Agronomy)

ANNUAL REPORT FOR 2015-16

ALL INDIA COORDINATED RESEARCH PROJECT ON SUGARCANE

CROP PRODUCTION (AGRONOMY AND SOIL SCIENCE)

Centre: Sugarcane Breeding Institute, Coimbatore - 641 007

Expt. No.AS 72. Agronomic performance of elite sugarcane genotypes

Report

With new set of elite clones experiment entitled “Agronomic performance of elite sugarcane genotypes” was initiated during February 2017. The experiment was laid out in split plot design with two replications. In all 16 elites sugarcane genotypes i.e. 8 early (Co 11004, CoM 11081, Co 11082, Co 11001, CoM 11082, CoM 11084 and Co 94008) and 8 mid-late (Co 11007, Co 99004, CoM 11085, CoM 11086 Co 11012,Co 11007, Co 11019, and Co 86032) with 125 % RDF were planted with two spacings (120 and 150 cm). The experimental field was low in available N and high in available in P and K. The soil pH was 8.55 and the EC was 0.20 ds/m. Germination and initial crop growth was satisfactory. Germination count at 30 days after planting was taken wherein mid late genotype C0 11005 (70.09 %) and early genotype Co 85004 (70.76 %) recorded higher germination. However at 45 DAP mid late genotype Co 11012 (86.025 %) and early genotype Co 11001 (70.48 %) recorded higher germination.

No. AS- 68. Impact of integrated application of organics and inorganics in improving soil health and sugarcane productivity

Report:

A field experiment with objective of developing nutrient management strategy for sustaining soil health and sugarcane production was laid out in randomized block design during January 2015 with 9 treatments replicated thrice. The experimental field was low in available nitrogen (216.38 N kg/ha) and high in available P and K. After harvest of plant crop ratooning and treatment scheduling was done consisting of application of organics and inorganics for nutrient management in sugarcane variety Co 86032 wherein at the time of ratooning as basal dose full phosphorous, FYM , 1/3 N and K was applied as per the treatments. In two split applications i.e. at the time of partial earthing up (30 DAP) and full earthing up (60 DAP) 1/3 nitrogen and potassium were applied. In first ratoon sugarcane crop, 20 t FYM + 150 STCR based fertilizer application was found beneficial in improving cane yield over rest of the nutrient

management treatments. The treatment 20 t FYM + 150 STCR based fertilizer application recorded the highest NMC (119753 NMC/ha) and cane yield (137.74 t/ha) and was closely followed by the treatments 10 t FYM+ Biofertilizers+ 150 STCR (127.27 t/ha). Sugarcane juice analysis done at 12 months revealed that Brix, Sucrose %, Purity % and CCS % were not influenced significantly by application of organics and inorganics. Crop was ratooned during February 2017 and various INM treatments were imposed.

1: Impact of integrated application of organics and inorganics on cane yield and juice quality.

Treatments	Cane Height (Cm)	Girth (mm)	SCW (kg)	NMC	Cane yield (t/ha)	Net Returns	BC ratio
T1 : 10 t/ha trash + 50% % RDF	193.12	27.48	1.07	106378.3	96.19	231752.9	2.32
T2 : 10 t/ha trash + 100 % RDF	219.37	26.83	1.17	107921.3	103.00	271237	2.41
T3 : 10 t/ha trash + STCR 150	215.41	27.56	1.25	105144	116.50	295435	2.46
T4 : 20 t FYM + 50 % RDF	195.62	28.03	1.25	104937.7	111.10	290043	2.23
T5 : 20 t FYM + 100 % RDF	192.70	25.55	1.28	102981	121.90	271065	2.15
T6 : 20 t FYM + STCR 150	233.12	29.25	1.43	119753	137.70	246855	2.06
T7 : 10 t FYM + 50 % RDF	207.29	27.48	1.18	100411	103.60	264329	2.27
T8 : 10 t FYM + 100 % RDF	185.62	26.12	1.06	109979	121.50	260450	2.23
T9 : 10 t FYM + STCR 150	176.45	27.12	1.13	110604.7	127.30	294027	2.30
SE (d)	1.16	1.25	0.11	6125.01	7.10	-	-
CD (0.05)	2.39	NS	NS	12546.85	14.55	-	-
GM						256979	2.2

2: Impact of integrated application of organics and inorganics on juice quality.

Treatments	Brix %	Sucrose %	Purity %	CCS %
T1 : 10 t/ha trash + 50% % RDF	22.8	20.04	87.79	13.82
T2 : 10 t/ha trash + 100 % RDF	21.9	19.63	89.48	13.65
T3 : 10 t/ha trash + STCR 150	22.5	19.36	86.13	13.22
T4 : 20 t FYM + 50 % RDF	22.7	19.12	84.34	12.92
T5 : 20 t FYM + 100 % RDF	21.7	19.13	88.24	13.22
T6 : 20 t FYM + STCR 150	22.5	18.40	81.86	12.24
T7 : 10 t FYM + 50 % RDF	22.9	19.64	86.08	13.40
T8 : 10 t FYM + 100 % RDF	22.5	19.88	88.65	13.77
T9 : 10 t FYM + STCR 150	22.5	19.01	84.39	12.85
SE (d)	0.48	0.59	87.79	13.82
CD (0.05)	NS	NS	89.48	13.65