Annual Report of Crop Production
(2014-15)
All India Co-ordinated Research Project (Sugarcane)

Experiment No. 1 **AS-42**

Title: Agronomic evaluation of promising sugarcane genotypes

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

Location: Seorahi
Year of commencement: 2007-08
Year of completion: Continuing
Treatments:

A. Genotypes	
V_1	CoSe 011451
V_2	CoSe 011453
V_3	CoSe 011454
B. Fertilizer levels	
N_1	75 % of recommended N
N_2	100 % of recommended N
N_3	125 % of recommended N

Design : Factorial RBD
Replication: 3
Plot size : 7.0 x 5.4 m^2

The soil of experimental field was medium in organic carbon (0.41), low in available phosphorus (15.0 kg/ha) and potash (70.19 kg/ha) with pH 8.44. Experimental crop was planted on March, 14, 2014 and harvested on March, 25, 2015.

Experimental results (Table-1) showed that significantly higher cane yield was found in genotype CoSe 011453 (97.62 t/ha) than that of genotype CoSe 011451 (88.45 t/ha) and CoSe 011454 (84.17 t/ha). Application of 125 % recommended dose of N produced significantly higher cane yield than that of 75 % of recommended dose of N, but at par with 100 % recommended N (180 kg/ha).

Summry

Genotype CoSe 011453 produce significantly higher cane yield (97.62 t/ha) followed by genotype CoSe 011451 (88.45 t/ha) and CoSe 011454 (84.17 t/ha). Cane yield increased significantly upto 100 % recommended dose of N.

Experiment No. 2 **AS-66**

Title : Priming of cane nodes for accelerating germination

Objective:

1. To find out suitable cane node priming technique
2. To assess the effect of cane node on acceleration of germination

Location: Seorahi

Year of commencement: 2012-13

Year of completion: 2014-15

Treatments

T1 – Unprimed cane node.
T2 – Treated cane node in hot water in 50^0C for 2 hrs.
T3 – Treated cane node in hot water in 50^0C + urea solution 3% for 2 hrs.
T4 – Priming cane node with cattle dung, cattle urine and water in 1:2:5 ratio.
T5 – Conventional 3 buds sett planting.
T6 – Primed and sprouted cane node incubated for 4 days after priming.

Note- Put the single cane node in the slurry of cattle dung, cattle urine and water for 15 minutes, take out the buds and put in decomposed FYM and cover it with sugarcane trash for 4-5 days for sprouting.

Design : RBD

Replication : 4

Plot size : 6.0 x 5.4 m^2
Variety : CoSe 01434

The soil of experimental field was medium in organic carbon (0.41), low in available phosphorus (15.0 kg/ha) and potash (70.19 kg/ha) with pH 8.44. Experimental crop was planted on March, 15, 2014 and harvested on March, 28, 2015.

Experimental data (Table-2) indicated that significantly higher germination (55.49 %) than that of Unprimed cane node (T_1) and conventional 3 buds sett planting (T_5). Maximum cane yield (83.5 t/ha) was also obtained in priming cane node with cattle dung, cattle urine and water in 1:2:5 ratio (T_4).

Summary:

Priming cane node with cattle dung, cattle urine and water in 1:2:5 ratio resulted significantly higher germination (55.49 %) than that of other treatments. Maximum cane yield (83.5 t/ha) was also obtained in priming cane node with cattle dung, cattle urine and water in 1:2:5 ratio (T_4).

Experiment No. 3 **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

Location: Seorahi

Year of start: 2014-15

Year of completion: 2016-17

Treatments:

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 FYM @ 20 tonnes/ha +50% RDF(inorganic source)
T_5	Application FYM @ 20 tonnes/ha +100% RDF(inorganic source)
T_6	Application FYM @ 20 tonnes/ha + inorganic nutrient application based on soil test
T_7	Application FYM @ 10 tonnes/ha+ bio-fertilizers (Azotobactor+PSB)+ 50% RDF
T_8	Application FYM @ 10 tonnes/ha+ bio-fertilizers (Azotobactor+PSB)+ 100% RDF
T_9	Application FYM @ 10 tonnes/ha+ bio-fertilizers (Azotobactor+PSB)+ soil test basis (NPK application)

Design : RBD

Replication: 3

Plot size : 6.0 x 5.4 m^2

Variety : CoSe 01434

The soil of experimental field was medium in organic carbon (0.56), low in available phosphorus (18.30 kg/ha) and medium in available potash (102.9 kg/ha) with pH 8.34. Experimental plant crop was planted on March, 19, 2014 and harvested on March, 10, 2015.

Experimental data given in table-3 revealed that application of FYM @ 10 tonnes/ha + bio-fertilizers (Azotobactor + PSB) @ 10 kg/ha each + soil test basis (NPK) produced significantly higher cane yield (110.29 t/ha) than that of other treatments in plant cane. Sucrose % in cane was significantly not affected with different treatments.

Summary:

Application of FYM @ 10 tonnes/ha + bio-fertilizers (Azotobactor + PSB) + soil test basis (NPK) produced significantly higher cane yield (110.29 t/ha) than that of other treatments. Sucrose % in cane was found to be more or less similar.

Climatic Parameters at GSBRI, Seorahi

Month/Year	Temperature (0· C)		Relative Humidity (%)		Rainfall (mm)	No. of rainy days
	Max.	Min.	F.N.	A.N.		
April, 14	18-05	33.89	69.20	44.80	Nil	Nil
May, 14	22.97	35.50	69.80	44.19	75.0	05
June, 14	26.24	35.86	73.40	48.40	57.8	05
July, 14	26.58	31.97	84.77	61.80	138.4	16
August, 14	25-16	31.50	93.74	69-22	701.4	22
September, 14	24.47	31.82	89.46	60.43	188.0	11
October, 14	19.38	31.22	84.19	60.77	176.8	04
November, 14	12.19	29.08	84.46	56.9	Nil	Nil
December, 14	7.87	18.54	91.67	64.35	53.0	03
January, 15	8.78	19.38	90.58	62.03	66.0	06
February, 15	9.85	23.9	88.07	58.75	13.8	02
March, 15	12.91	27.19	82.87	59.58	100.2	05

Table-1: Effect of treatments on germination, shoots, millable canes, cane yield and sucrose % (Plant cane)

Treatments	Germination (%)	Shoots (000/ha)	NMC (000/ha)	Cane yield (t/ha)	Sucrose (%)
(A) Genotypes					
V_1-CoSe 011451	39.77	185	156	88.45	16.64
V_2-CoSe 011453	44.60	198	160	97.62	16.68
V_3-CoSe 011454	38.62	179	143	84.17	17.04
SE±	1.17	3.03	5.11	2.81	0.27
CD 5%	2.48	6.43	10.83	5.95	NS
(B) Fertilizer levels					
N_1-75% of recommended dose of N	40.39	173	142	84.41	16.87
N_2-100% of recommended dose of N	39.74	192	155	90.62	16.84
N_3-125% of recommended dose of N	42.86	197	162	95.11	16.66
SE±	1.17	3.03	5.11	2.81	0.27
CD 5%	2.48	6.43	10.83	5.95	NS

Table-2: Effect of treatments on germination, shoots, millable canes, cane yield and sucrose %

Treatments		Germ. (%)	Shoots (000/ha)	NMC (000/ha)	Cane yield (t/ha)	Sucrose (%)
T^1-	Unprimed cane node	45.20	146	123	80.26	15.99
T^2-	Treating cane node in hot water at 50^0C for 2 hours	50.83	150	125	81.49	16.39
T^3-	Treating cane node in hot water at 50^0C and urea solution (3%)	52.70	155	127	52.65	16.16
T^4-	Priming cane node with cattle dung, cattle urine and water in 1:2:3 ratio	55.49	151	128	83.50	16.24
T^5-	Conventional 3 bud sett planting	46.32	149	125	81.03	16.94
T^6-	Primed and sprouted cane node incubated for four days after priming	53.54	143	119	77.32	17.08
	SE±	3.06	4.52	5.17	3.37	.47
	CD 5%	6.52	NS	NS	NS	NS

Table-3: Effect of treatments on germination, shoots, millable canes, cane yield and Sucrose % (Plant cane)

Treatments		Germ. (%)	Shoots (000/ha)	NMC (000/ha)	Cane yield (t/ha)	Sucrose (%)
T_1	No organic + 50% RDF	42.90	160	135	87.14	13.49
T_2	No organic + 100% RDF	42.82	167	138	88.89	14.02
T_3	No organic + soil test based recommendation	41.28	170	140	90.02	14.49
T_4	Application FYM @ 20 tonnes/ha +50% RDF(inorganic source)	43.28	161	133	87.14	14.24
T_5	Application FYM @ 20 tonnes/ha +100% RDF(inorganic source)	45.52	164	137	89.40	13.68
T_6	Application FYM @ 20 tonnes/ha + inorganic nutrient application based on soil test	43.67	181	142	93.21	14.29
T_7	Application FYM @ 10 tonnes/ha+ bio-fertilizers (Azotobactor+PSB)+ 50% RDF	49.69	193	154	102.16	14.22
T_8	Application FYM @ 10 tonnes/ha+ bio-fertilizers (Azotobactor+PSB)+ 100% RDF	50.46	202	160	106.17	14.72
T_9	Application FYM @ 10 tonnes/ha+ bio-fertilizers (Azotobactor+PSB)+ soil test basis (NPK application)	51.38	205	166	110.29	14.62
	SE±	0.72	4.72	3.45	2.26	0.22
	CD 5%	1.52	10.01	7.31	4.79	NS