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: Shahjahanpur
Year of commencement: 2007-08
Year of completion: Continuing
Treatments:

A. Genotypes	
V_1	CoS 03251
V_2	CoS 07240
V_3	CoS 03261
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 : 8.0 x 5.4 m^2

The soil of experimental field was medium in organic carbon (0.63), low in phosphorus (14.80 kg/ha) and medium in potash (118 kg/ha) with pH 6.76. Experimental crop was planted on 13.02.2014 and harvested on 04.02.2015.

Experimental results (Table-1) reveled that genotype CoS 07240 produced significantly higher cane yield (85.34 t/ha) than that of genotype CoS 03261 (81.67 t/ha) and CoS 03251 (78.82). CCS % in cane was observed significantly higher in genotype CoS 03251 (11.23) than that of CoS 03261 (10.65) and CoS 07240 (10.23). Regarding nitrogen levels, significantly higher cane yield (86.34 t/ha) was recorded with 125 % of recommended dose of N than that of 75 % of recommended N, however, 100 % recommended N (180 kg/ha) was found at par with 125 % recommended dose of N.

Summry

Genotype CoS 07240 gave significantly higher cane yield (85.34 t/ha) followed by genotype CoS 03261 (81.67 t/ha) and CoS 03251 (78.82). Regarding different nitrogen levels, significantly higher cane yield (86.34 t/ha) was obtained with 125 % of recommended N than that of 75 % of recommended 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: Shahjahanpur

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 low in organic carbon (0.31), phosphorus (15.60 kg/ha) and medium in potash (129.5 kg/ha) with pH 7.37. Experimental crop was planted on 26.02.2014 and harvested on 28.03.2015.

Experimental results indicated that (table-2) significantly higher germination (44.0 %), NMC (1, 37,731) and cane yield (99.03 t/ha) were obtained in priming cane node with cattle dung, cattle urine and water in 1:2:5 ratio (T_4). CCS % in cane was not significantly affected with different treatments.

Summary:

Priming cane node with cattle dung, cattle urine and water in 1:2:5 ratio resulted significantly higher germination and cane yield than that of other treatments. CCS % in cane was not affected with different treatments.

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: Shahjahanpur

Year of start: 2014-15

Year of completion: 2016-17

Treatments:

	Plant crop	**Ratoon crop**
T_1	No organic + 50% RDF	Application of trash @ 10 tonnes/ha + 50% RDF
T_2	No organic + 100% RDF	Application of trash @ 10 tonnes/ha + 100% RDF
T_3	No organic + soil test based recommendation	Application of trash @ 10 tonnes/ha + soil test basis (NPK application)
T_4	Application FYM @ 20 tonnes/ha +50% RDF(inorganic source)	Application FYM @ 20 tonnes/ha +50% RDF(inorganic source)
T_5	Application FYM @ 20 tonnes/ha +100% RDF(inorganic source)	Application FYM @ 20 tonnes/ha +100% RDF(inorganic source)
T_6	Application FYM @ 20 tonnes/ha + inorganic nutrient application based on soil test	Application FYM @ 20 tonnes/ha + inorganic nutrient application based on soil test (NPK application)
T_7	Application FYM @ 10 tonnes/ha+ bio-fertilizers (Azotobactor+PSB)+ 50% RDF	Application FYM @ 10 tonnes/ha+ bio-fertilizers (Azotobactor+PSB)+ 50% RDF
T_8	Application FYM @ 10 tonnes/ha+ bio-fertilizers (Azotobactor+PSB)+ 100% RDF	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)	Application FYM @ 10 tonnes/ha+ bio-fertilizers (Azotobactor+PSB)+ soil test basis (NPK application)

Design : RBD

Replication: 3

Plot size : 8.0 x 5.4 m^2

Variety : CoS 08279

The soil of experimental field was low in organic carbon (0.36), medium in phosphorus (20.40 kg/ha) and potash (162 kg/ha) with pH 6.54. Experimental plant crop was planted on 12.02.2014 and harvested on 05.03.2015. Ratoon experiment is in progress.

Experimental data given in table-3 showed that application of FYM @ 10 tonnes/ha + bio-fertilizers (Azotobactor + PSB) @ 10 kg/ha each + soil test basis (NPK) produced significantly higher cane yield (113.10 t/ha) than that of other treatments in plant cane. CCS % in cane was significantly not affected with different treatment.

Summary:

Application of FYM @ 10 tonnes/ha + bio-fertilizers (Azotobactor + PSB) + soil test basis (NPK) produced significantly higher cane yield (113.10 t/ha) than that of other treatments.CCS % in cane was found to be more or less similar.

Climatic Parameters at SRI, Shahjahanpur

Month/Year	Temperature (0· C)		Relative Humidity (%)		Rainfall (mm)	No. of rainy days
	Max.	Min.	F.N.	A.N.		
April, 14	35.4	19.7	56	45	7.8	01
May, 14	38.1	24.4	52	34	9.2	02
June, 14	39.8	26.6	62	46	19.0	02
July, 14	33.7	26.3	85	77	321.0	19
August, 14	35.0	26.4	83	76	47.6	05
September, 14	33.7	24.4	85	73	80.4	08
October, 14	32.1	18.7	88	60	31.0	02
November, 14	28.6	10.4	86	73	Nil	Nil
December, 14	19.9	6.3	90	84	12.0	03
January, 14	17.0	7.4	94	84	28.5	06
February, 14	25.1	11.8	89	63	Nil	Nil
March, 14	28.9	15.5	84	58	76.0	08

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

Treatments	Germination (%)	Shoots (000/ha)	NMC (000/ha)	Cane yield (t/ha)	CCS (%)
(A) Genotypes					
V_1- CoS 03251	37.60	133.14	95.52	78.82	11.23
V_2- CoS 07240	48.10	174.03	130.83	85.34	10.46
V_3- CoS 03261	37.60	158.10	119.68	81.67	10.65
SE±	1.56	2.79	3.81	2.33	0.17
CD 5%	3.32	5.92	8.07	4.95	0.35
(B) Fertilizer levels					
N_1-75% of recommended dose of N	40.61	151.31	107.87	75.31	10.71
N_2-100% of recommended dose of N	40.91	155.36	114.54	84.10	10.84
N_3-125% of recommended dose of N	41.73	158.60	121.60	86.34	10.78
SE±	1.56	2.79	3.81	2.33	0.17
CD 5%	NS	5.92	8.07	4.95	NS

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

Treatmemts		Germ. %	Shoots (000/ha)	NMC (000/ha)	Cane yield (t/ha)	CCS %
T^1-	Unprimed cane node	30.40	159.25	111.11	80.90	10.67
T^2-	Treating cane node in hot water at 50^0C for 2 hours	35.20	187.26	117.59	78.59	10.50
T^3-	Treating cane node in hot water at 50^0C and urea solution (3%)	36.70	210.76	130.78	92.82	10.10
T^4-	Priming cane node with cattle dung, cattle urine and water in 1:2:3 ratio	44.00	227.66	137.73	99.03	10.38
T^5-	Conventional 3 bud sett planting	39.90	150.92	107.52	76.73	10.65
T^6-	Primed and sprouted cane node incubated for four days after priming	30.60	143.05	105.09	89.58	10.50
	SE±	2.40	4.75	5.12	2.72	0.28
	CD 5%	5.11	10.12	10.09	5.79	NS

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

Treatmemts		Germ. %	Shoots (000/ha)	NMC (000/ha)	Cane yield (t/ha)	CCS %
T_1	No organic + 50% RDF	42.65	137.73	97.22	79.74	10.41
T_2	No organic + 100% RDF	41.17	148.95	105.09	82.64	10.40
T_3	No organic + soil test based recommendation	41.47	145.36	102.08	84.03	10.78
T_4	Application FYM @ 20 tonnes/ha +50% RDF(inorganic source)	42.86	140.50	98.61	79.86	10.36
T_5	Application FYM @ 20 tonnes/ha +100% RDF(inorganic source)	42.16	151.85	106.94	95.95	10.83
T_6	Application FYM @ 20 tonnes/ha + inorganic nutrient application based on soil test	41.26	162.49	114.23	96.30	10.87
T_7	Application FYM @ 10 tonnes/ha+ bio-fertilizers (Azotobactor+PSB)+ 50% RDF	45.23	151.50	106.49	87.27	10.49
T_8	Application FYM @ 10 tonnes/ha+ bio-fertilizers (Azotobactor+PSB)+ 100% RDF	46.23	167.27	117.12	104.28	10.47
T_9	Application FYM @ 10 tonnes/ha+ bio-fertilizers (Azotobactor+PSB)+ soil test basis (NPK application)	43.35	174.99	123.26	113.10	10.90
	SE±	1.85	5.17	2.95	2.26	0.13

CD 5%	NS	10.96	6.25	4.80	0.27