DIVISION OF CROP PRODUCTION
ICAR- IISR, LUCKNOW

List of the AICRP Projects

S.No.	Project No. & Title		Name of P.I.	Duration
1	AS 42	Agronomic evaluation of promising genotypes of sugarcane	S. R. Singh	Long term
2	AS 64	Response of sugarcane crop to different plant nutrients in varied agro- ecological situations	Chandra Gupta	2011-2014
3	A S 67	Optimization of fertigation schedule for sugarcane through micro-irrigation technique under different agro-climatic conditions	Rajendra Gupta	2012-16
4	A S 68	Impact of integrated application of organics and inorganics in improving soil health and sugarcane productivity	A. K. Singh	2014-2018
5	A S 69	Use of plant growth regulators (PGRs) for enhanced yield and quality of sugarcane	R. R. Verma	2015-2018
6	AS-70	Scheduling irrigation with mulch under different sugarcane planting method	Ishwar Singh	2016-2018
7	AS 71	Carbon Sequestration assessment in sugarcane based cropping system	S. K. Shukla	2016-2019
8	AS 72 (A)	Agronomic performance of elite sugarcane genotype (Early)	V. P. Singh	2016- Long term
9	AS 72 (B)	Agronomic performance of elite sugarcane genotype (Midlate)	K. K. Singh	2016-Long term

AS-42 : Agronomic evaluation of promising genotypes of sugarcane

(S. R. Singh S. K. Shukla)

Summary of the work done :

The performance of three midlate genotype of sugarcane and three levels of fertilizer doses on plant growth, yield and its attributes and juice quality were assessed. Genotype CoPb 08217 was found superior over CoLk 09204 and CoS 0835 in respect of cane and ratoon yield as well as juice quality. However, genotype CoLk 09204 observed significantly higher shoot count and NMC over the CoPb 08217 in both plant cane and ratoon. Application of 125% RDF recorded highest growth, shoot counts, NMC, cane and ratoon yield than 75 and 100% RDF but were at par to each other.

Salient achievement :

Field experiment was conducted to assess the effect of graded doses of fertilizer application on different genotypes of sugarcane. The experiment consisted 9 treatment combinations with three genotypes viz., COPb 08217, CoLk 09204 and CoS 0835 and three doses of fertilizers application viz., 75, 100 and 125% RDF. The experiment was laid out in factorial RBD design with three replication. The data illustrated that growth, yield and its attributes and juice quality affected significantly with different genotypes of sugarcane, except germination. The genotype CoLk 09204 observedsignificantly higher shoot count and NMC over the CoPb 08217. However, cane yield (69.41 t/ha) was recorded significantly higher with COPb 08217 over the CoS 0835 and CoLk 09204. The genotype CoS 0835 and CoLk 09204 were at par to each other in respect of cane yield, cane length, cane juice (Table 1). Application of fertilizers at different levels showed significant effect on shoot counts, NMC, cane yield and cane length. However, germination, shoot counts, pol (%) and purity (%) were non-significant. Application of 125% RDF showed significant effect on shoot counts, NMC, cane girth, cane yield and CCS (%) over the 75% RDF butnosignificant differences were observed between 100% and 125% RDF and 75 and 100% RDF (Table 1). Data on sugarcane ratoon growth, yield attributes and ratoon cane yield revealed significant effect of sugarcane genotypes and different levels of recommended of fertilizers. The significantly higher cane length (166.6 cm), girth 2.57 cm), NMC (123.1 k/ha), yield (79.26 t/ha), pol (17.98%), purity (90.67), CCS (13.08%) and CCS (9.78 t/ha)were recorded in CoPb 08217 over the CoLk 09204 and CoS0835 but genotype CoLk 09204 and CoS0835 were at par to each other in most of the cases (Table 2).Application of 125% RDF showed significant effect on shoot counts, cane length, cane girth and ratoon yield NMC, cane yield and cane length over 75% RDF. However, germination, shoot counts, pol (%), purity, CCS (%) and CCS (t/ha) and purity (%) were non-significant. However, no significant differences were observed between 75% and 100% as well as 100% RDF and 125% RDF (Table 2).

Table 1. Plant growth, yield attributes, cane yield and quality of juice affected under different genotypes and fertilizer doses

Treatment	Germination (%) at 45 days	Shoot counts (000/ha)	Cane length (cm)	Cane girth (cm)	NMC (000/ha)	Cane yield (t/ha)	Pol (%)	Purity (%)	CCS (%)	CCS (t/ha)
Genotypes										
COPb 08217	35.68	130.3	213.1	2.60	98.21	69.41	17.92	90.10	13.47	8.88
CoLk 09204	34.43	138.2	201.7	2.37	110.3	62.27	16.52	88.29	12.47	7.76
CoS 0835	34.37	136.0	197.1	2.53	100.1	62.31	17.27	88.40	12.99	8.39
Sem (±)	0.86	2.13	2.69	0.05	1.86	1.24	0.30	0.42	0.21	0.20
CD (P=0.05)	NS	6.39	8.08	0.15	5.58	3.72	0.91	1.26	0.65	0.60
Fertilizers doses										
75% RDF	34.88	131.2	199.6	2.40	100.7	62.58	17.02	88.85	13.25	8.17
100% RDF	34.90	135.5	204.5	2.53	102.3	64.34	17.04	88.94	12.84	8.28
125%RDF	34.70	138.9	207.8	2.57	105.7	67.08	17.64	89.00	12.83	8.59
Sem (±)	0.86	2.13	2.69	0.05	1.86	1.24	0.30	0.42	0.21	0.20
CD (P=0.05)	NS	6.39	NS	0.15	4.34	3.72	NS	NS	0.65	NS

Table 2. Genotypes and fertilizer doses affected plant growth, yield and juice quality of Ratoon Sugarcane

Treatment	Shoot counts	Cane length (cm)	Cane girth (cm)	NMC (000/ha)	Yield (t/ha)	Pol (%)	Purity	CCS (%)	CCS (t/ha)
Genotypes									
CoPb 08217	144.48	166.6	2.57	123.06	79.26	17.98	90.67	13.08	9.78
CoLk 09204	158.63	156.1	2.29	113.12	73.53	17.41	89.32	12.45	9.10
CoS 0835	157.67	154.2	2.46	108.70	74.60	17.50	90.10	12.88	9.61
Sem.(±)	2.25	2.64	0.04	1.47	1.44	0.15	0.21	0.11	0.17
CD (P =0.05)	6.76	7.64	0.12	4.41	4.32	0.61	0.69	0.49	0.50
Fertilizers doses									
75% RDF	150.62	153.9	2.35	110.7	72.58	17.40	89.89	12.67	9.22
100% RDF	152.90	157.5	2.46	113.87	76.03	17.64	89.93	12.74	9.71
125%RDF	157.26	165.5	2.50	120.51	78.78	17.84	90.27	12.99	9.57
Sem. (±)	2.25	2.64	0.04	1.47	1.44	0.15	0.21	0.11	0.17
CD (P =0.05)	NS	7.64	0.12	4.41	4.32	NS	NS	NS	NS

AS 64: Response of sugarcane crop to different plant nutrients in varied agro- ecological situations (*Chandra Gupta, S.K. Shukla and A.K. Singh*)

Field experiment was ratooned during spring (1st week of March) of 2015. Soil of the experimental field was sandy loam (*Inceptisol*), neutral in reaction (pH 7.45), initially soil was medium in available nitrogen (225.8 kg/ha), low in organic carbon (0.40%), phosphorus (17.24 kg P_2O_5/ha) and potassium (191.00 kg K_2O/ha) contents. The experiment was continued with mid late maturing sugarcane variety Co Se 92423 in randomized block design with fourteen treatment of nutrient combinations for its residual effect. The treatments were T_1 : Control (no fertilizer), T_2 : N (150 kg/ha), T_3 : NP (150:60 kg/ha), T_4 : NPK (recommended dose 150:60:60 kg/ha), T_5 : NPK+S (150:60:60+S @ 40kg/ha), T_6 : NPK+Zn (150:60:60+$ZnSO_4$ @ 25kg/ha), T_7 : NPK+Fe (150:60:60 + $FeSO_4$ @ 10kg/ha), T_8 : NPK+Mn (150:60:60 + $MnSO_4$ @ 5kg/ha), T_9 : NPK+S+Zn (150:60:60 + S 40 + $ZnSO_4$ 25kg/ha), T_{10} : NPK+S+Zn +Fe (150:60:60 + S 40+Zn SO_4 25+$FeSO_4$ @10kg/ha), T_{11} : NPK+S+Zn+ Fe+Mn (150:60:60+S 40+$ZnSO_4$ 25+ $FeSO_4$10+ $MnSO_4$ 5kg/ha), T_{12}: Soil test based fertilizer application (STF- NPK: 187.5+ 75+75 kg/ha), T_{13}: only FYM @ 20t/ha and T_{14} : Soil test crop response (STCR-IISR –NPK : 142:110:240 kg/ha).

The shoot count at 90 days after initiation was uniform in all the treatments, except FYM was superior. Results revealed that significantly higher number of millable canes (NMC 94.60 k/ha), cane yield (75.05 t/ha) were recorded with NPK+S (T_5) and NPK+S+Zn (T_9) with NMC (93.17 k/ha) and cane yield (75.73 t/ha) over the control (NMC 83.17 k/ha and cane yield 58.77 t/ha, respectively), which was 11 % and 22 % higher in both the treatments.

Similarly, FYM (T_{13}) recorded higher cane yield (73.21 t/ha) followed by the treatment NPK+Zn (T_6) with cane yield 72.85 t/ha; NPK+S+Zn+Fe+Mn (T_{11}) cane yield 71.59 t/ha and Soil test crop response (STCR-IISR:T_{14}) with cane yield 71.13 t/ha as compared to other treatments, however, yield *per se* were on par. Cane juice quality parameters, *viz*., Brix, sucrose and purity were not found to be significant among any of the nutrients applied.

Table : Effect of plant nutrient combinations on growth, cane yield and juice quality of sugarcane

Treatment	Shoot Count at 90 DAR (k/ha)	NMC (k/ha)	Cane yield (t/ha)	Juice quality parameters at harvest		
				°Brix	Sucrose (%)	Purity (%)
T1 Control	106.88	83.17	58.77	20.09	17.31	86.09
T2 N	107.73	86.98	62.37	20.41	17.87	87.51
T3 NP	109.84	87.14	65.14	19.54	16.72	85.56
T4 NPK	113.54	87.61	70.15	18.94	16.23	85.62
T5 NPKS	116.19	94.60	75.05	19.55	16.95	86.71
T6 NPKZn	119.37	88.88	72.85	19.49	17.03	87.35
T7 NPKFe	126.56	84.12	65.89	19.64	17.01	86.58
T8 NPKMn	109.31	83.96	69.55	18.83	15.93	84.62
T9 NPKSZn	118.31	93.17	75.73	20.06	17.68	87.93
T10 NPKSZnFe	127.09	88.25	70.21	19.50	16.94	86.80
T11 NPKSZnFeMn	110.36	88.57	71.59	18.92	16.29	86.21
T12 STF	110.37	88.88	70.89	19.89	16.98	85.36
T13 FYM 20 t/ha	127.09	89.84	73.21	19.15	16.54	86.40
T14 STCR-IISR	114.07	88.89	71.13	18.88	16.29	86.19
CD (5%)	NS	NS	15.88	NS	NS	NS

DAR: Days after ratooning

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

(Rajendra Gupta, S.K.Shukla, C. Gupta)

Third ratoon crop was initiated during third week of February, 2015 and the crop was harvested in the third week of January, 2016. It was observed that irrigation treatments significantly influenced sugarcane yield and irrigation water use efficiency. Effect of nitrogen doses and irrigation treatments both was observed to be significant on sugarcane yield and irrigation water use efficiency (Table 1 and 2). Highest sugarcane yield of 111.42 t/ha was observed when sugarcane was drip fertigated with recommended dose of nitrogen and water equivalent to 125 % pan evaporation (Table 1). However, irrigation water use efficiency (IWUE) was the highest at 2265.5 kg/ha-cm when fertigation with recommended dose of nitrogen was done and the amount of irrigation water was kept at 75 per cent of pan evaporation (Table 2). The sugarcane yield and IWUE were influenced by doses of nitrogen in fertigation treatments but the influence of nitrogen on sugarcane yield and irrigation water use efficiency was more distinctive in surface irrigation treatment. With surface irrigation, the mean sugarcane yield and IWUE were 74.21 t/ha and 773.1 kg/ha-cm respectively.

Table 1. Sugarcane yield (t/ha)

Nitrogen / Irrigation	Nitrogen application rate			
	N1 = 100% recommended dose of N	N2 = 75% recommended dose of N	N3 = 50% recommended dose of N	Average
I1= Sub Surface Drip at 75% PE	97.42	93.25	92.46	94.38
I2 = Sub Surface Drip at 100% PE	102.96	101.92	100.04	101.64
I3 = Sub Surface Drip at 125% PE	111.42	107.05	106.21	108.23
I4=Farmers practice surface irrigation	80.71	73.34	68.59	74.21
Average	98.13	93.89	91.83	
SE (Irrigation)				1.38
CD (Irrigation)				4.38
SE (Nitrogen)				1.19
CD (Nitrogen)				5.13
SE (IxN)				1.38
CD(IxN)				NS

Table 2. Irrigation water use efficiency (kg/ha-cm)

Nitrogen / Irrigation	Irrigation water applied (ha-cm)	Nitrogen application rate			
		N1 = 100% recommended dose of N	N2 = 75% recommended dose of N	N3 = 50% recommended dose of N	Average
I1= Sub Surface Drip at 75% PE	43.0	2265.5	2168.7	2150.2	2194.8
I2 = Sub Surface Drip at 100% PE	57.0	1806.3	1788.1	1755.1	1783.2
I3 = Sub Surface Drip at 125% PE	72.5	1536.8	1476.5	1465.0	1492.8
I4=Farmers practice surface irrigation	96.0	840.8	764.0	714.4	773.1
Average		1612.4	1549.3	1521.2	
SE (Irrigation)					22.7
CD (Irrigation)					72.2
SE (Nitrogen)					19.7
CD (Nitrogen)					84.6
SE (IxN)					22.7
CD(IxN)					NS

AS 68 : Impact of integrated application of organics and inorganics in improving soil health and sugarcane productivity

(PI: Dr. A. K. Singh, T. K. Srivastava, K. P. Singh and S. R. Singh)

Summary of the work done :

Field experiment was conducted to develop nutrient management strategy for sustaining soil health and sugarcane production. The experiment consisted of 10 treatments *viz*. T_1- Application of trash @10 t/ha + 50% RDF (recommended dose of fertilizer): T-10+50 % RDF, T_2-Application of trash @10 t/ha + 100% RDF : T-10+100% RDF, T_3-Application of trash @ 10 t/ha + soil test based recommendation: T-10+STBR, T_4-Application of FYM @ 20 t/ ha + 50% RDF (inorganic source) : 20 t + 50% RDF, T_5-Application of FYM @ 20 t / ha + 100% RDF (inorganic source) : 20 t + 100 % RDF,T_6-Application of FYM @ 20 t / ha + inorganic nutrient application based on soil test : 20 t + STRC, T_7-Application of FYM @ 10 t / ha + biofertilizer (*Acetobacter* + *PSB*) + 50% RDF : 10 t + B + 50 % RDF, T_8-Application of FYM @ 10 tonnes / ha + biofertilizer (*Acetobacter* + *PSB*) + 50% RDF : 10 t + B + 100 % RDF, T_9-Application of FYM@ 10 t / ha + biofertilizer (*Acetobacter* + *PSB*) + inorganic nutrient application based on soil test : 10 t + B + STBR, T10-Only organic : Organic.The experiment was laid out in Randomised Block Design with three replications. The cane setts were soaked with bioferilizer cultures by dipping in the containers. FYM was applied in the furrows at the time of planting. In ratoon crop, the treatments were applied at the time of ratoon initiation along with the furrows.

The data on first ratoon of sugarcane growth, yield and quality (Table 1 and 2) indicated significant variations among the treatments. Significantly the highest rate of ratoon stubble sprouts (92.6%) was observed under the treatment of only organic application followed by 20 t FYM + STRC nutrient application. Highest number of tillers (254.9 thousand /ha at 120 days after initiation), shoot count (210.7 thousand/ha at 180 DAI), number of millable canes (167.9 thousand/ha), cane yield (91.7 t/ha) and sugar yield (11.07 t/ha) were recorded under the treatment where application of FYM @ 20t/ha was done along with soil test (rating chart) based inorganic fertilizer recommendations. However it was found comparable to the treatment of FYM @ 10 t/ha along with biofertilizer and soil test basis inorganic fertilizers application. The yield attributing characters vis. cane length (225.3 cm), cane girth (2.34 cm) and weight of individual cane (1.03 kg) was recorded significantly highest with the application of FYM @ 20 t/ha along with inorganic fertilizers applied on the basis of soil test rating chart. The quality parameters viz. brix value and pol % were significantly improved with application of FYM and biofertilizers.

Salient research achievements :

Significantly the highest rate of stubble sprouts (92.6%) was observed under the treatment of organic application. Highest number of tillers (254.9 thousand /ha at 120 days after initiation), shoot count (210.7 thousand/ha at 180 DAI), number of millable canes (167.9 thousand/ha), cane yield (91.7 t/ha) and sugar yield (11.07 t/ha) were recorded under the treatment where application of FYM @ 20t/ha was done along with soil test (rating chart) based inorganic fertilizer recommendations. However it was found comparable to the treatment of FYM @ 10 t/ha along with biofertilizer and soil test basis inorganic fertilizers application. The yield attributing characters vis. cane length (225.3 cm), cane girth (2.34 cm) and weight of individual cane (1.03 kg) was recorded significantly highest with the application of FYM @ 20 t/ha along with inorganic fertilizers applied on the basis of soil test rating chart. The quality parameters viz. brix value and pol % were significantly improved with application of FYM and biofertilizers.

Table 1 Growth and yield of first ratoon cane under different treatments

		Sprouts	May	June	July	August	Sep	Oct	NMC	Yield
Tr.	**Treatment**	**%**	**(ooo/ha)**	**(ooo/ha)**	**(ooo/ha)**	**(ooo/ha)**	**(ooo/ha)**	**(ooo/ha)**	**(ooo/ha)**	**(t/ha)**
1.	T-10+50 %RDF	83.7	140.6	156.7	180.4	171.6	160.8	155.9	110.70	57.60
2.	T-10+100 % RDF	85.9	170.7	185.4	215.7	216.8	190.6	167.6	129.50	73.40
3.	T-10+STBR	85.3	172.3	184.6	216.6	204.9	185.7	175.8	135.40	76.80
4.	20 t 50 % RDF	87.4	176.9	181.2	220.7	209.7	186.9	169.8	129.60	74.40
5.	20 + 100% RDF	88.3	190.2	204.7	234.5	226.7	204.8	196.2	155.70	87.60
6.	20 + STRC	89.2	202.4	228.7	254.9	246.9	210.7	197.6	167.90	91.70
7.	10+ B +50 %RDF	86.4	159.6	174.2	202.7	191.4	172.6	159.5	112.90	65.60
8.	10+B+100 %RDF	88.5	179.7	197.4	226.9	215.7	197.8	182.9	159.70	75.90
9.	10+ B STBR	87.6	187.6	201.8	232.5	223.6	205.7	185.6	163.40	89.70
10.	Organic	92.6	146.7	160.2	194.6	196.3	189.5	167.9	122.60	82.70
	SEm ±	1.16	3.77	3.24	3.63	4.35	3.55	4.82	3.22	2.42
	CD (P= 0.05)	3.46	11.29	9.59	10.76	12.89	10.53	14.26	9.54	7.29

Table 2. Effect of different treatments on juice quality, ratoon cane yield attributes and sugar yield

Tr.	Treatment	Brix %	Pol % %	Purity %	Length cm	Girth cm	Cane Wt kg	CCS %	CCS t/ha
1.	T-10+50 %RDF	19.12	15.59	85.44	190.60	2.11	0.83	10.35	5.96
2.	T-10+100 % RDF	19.11	15.98	85.05	210.75	2.17	0.87	10.75	7.89
3.	T-10+STBR	19.83	16.20	85.74	215.69	2.28	0.87	10.77	8.27
4.	20 t 50 % RDF	19.28	16.30	84.41	201.33	2.24	0.93	11.03	8.20
5.	20 + 100% RDF	19.99	17.31	86.56	220.70	2.25	0.95	11.85	10.38
6.	20 + STRC	19.80	17.47	85.97	225.30	2.34	1.03	12.07	11.07
7.	10+ B +50 %RDF	19.59	16.75	85.50	200.60	2.21	0.83	11.39	7.47
8.	10+B+100 %RDF	19.62	16.76	85.26	210.72	2.26	0.96	11.40	8.65
9.	10+ B STBR	19.16	16.35	85.29	222.70	2.31	0.99	11.11	9.97
10.	Organic	19.90	17.13	86.11	203.00	2.30	0.90	11.70	9.67
	SEm ±	0.19	0.35	0.24	3.84	0.03	0.03	0.31	0.44
	CD(P= 0.05)	0.58	1.10	0.69	11.29	0.12	0.10	0.94	1.31

AS-69 : Use of plant growth regulators (PGRs) for enhanced yield and quality of sugarcane

(R.R. Verma & S.R.Singh)

A field experiment of All India Coordinated Research Project (AICRP) on sugarcane on Use of plant growth regulators (PGRs) on yield and quality of sugarcane was conducted during the year 2015-16 at IISR research farm, Lucknow. The planting of sugarcane was done during the spring season of 2015 and the crop was harvested after twelve months. The experiment consisting eight treatment viz. conventional planting /farmers practice (3-bud setts), planting of setts after overnight soaking in water, planting of setts after overnight soaking in 50 ppm ethrel solution, planting of setts after overnight soaking in 100 ppm ethrel solution,T1+ GA_3 spray (35 ppm) at 90, 120 and 150 days after planting (DAP),T2+ GA_3 spray (35 ppm) at 90, 120 and 150 DAP, T3+ GA_3 spray (35 ppm) at 90, 120 and 150 DAP and T4+ GA_3 spray (35 ppm) at 90, 120 and 150 DAP. The Experiment was conducted in a randomised block design (RBD) with three replications. The recommended dose of nitrogen 150 kg, phosphorus 60 kg and potash 60 kg per hectare was applied in all the treatments. The experimental field soil was analyzed alkaline in soil reaction, neutral in electrical conductivity, low in organic carbon, available nitrogen and medium in available phosphorus and potassium. The DTPA extractable micronutrients viz. Zn, Cu, Fe and Mn were above to their critical limits. The sugarcane setts overnight soaking in 50 and 100 ppm ethrel solution enhanced early sugarcane germination as compared to that of control and water soaked treatments. The GA_3 application at the rate of 35 ppm application at 90, 120 and 150 days after planting enhanced cane length, number of millable cane and cane yield. The treatment planting of setts after overnight soaking in 100 ppm ethrel solution and GA3 spray at 90,120 and 150 days after planting recorded significantly higher cane yield (96.67 t/ha). The same treatment also recorded higher cane length (243 cm), diameter (2.16 cm), weight (910 g) and number of millable cane 146.8 thousands/ha). Whereas, the cane diameter and juice quality parameters viz. brix, (sucrose %, purity % and commercial cane sugar % were not affected significantly due to use of plant growth regulators in sugarcane.

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

(Ishwar Singh & C.Gupta)

A field experiment has been started during 2015-16 (February 2016) to enhance crop and water productivity in sugarcane at research farm of the institute. The experiment comprising 12 treatment combinations was laid out in split plot design with four replications. Planting methods with or without mulch were the main plot treatments viz., 1. Conventional flat planting (75 cm row spacing) with mulch, 2. Conventional flat planting (75 cm row spacing) without mulch, 3. Paired row trench planting (30:120 cm row spacing) with mulch and 4. Paired row trench planting (30:120 cm row spacing) without mulch and irrigation scheduling as sub-plot treatments viz., irrigation scheduling at IW/CPE ratio of 0.60, 0.80 and 1.0 . Sugarcane variety CoPk 05191 was planted on February 17, 2016. Fifty per cent of recommended nitrogen and full dose of phosphorus and potassium (recommended dose: 150 kg N, 60 kg P_2O5 and 60 kg K_2O) was applied at the time of planting in all the treatments. First irrigation was applied at the time of germination i.e. 45 days after planting and subsequent irrigations are being scheduled on the basis of IW/CPE ratio in the respective plots. Soil sample has been collected for initial soil fertility status. The observations on infiltration rate, soil moisture constraints and germination in sugarcane has been recorded. Growth parameters in sugarcane and soil moisture studies is in progress.

AS 71: Carbon Sequestration assessment in sugarcane based cropping system

(S. K. Shukla and V.P. Singh)

The experiment was laid out in randomized block design with eight treatments and three replications under rice-wheat and sugarcane-ratoon-wheat systems. Sugarcane genotype (CoPk 05191) was planted in the experiment in last week of February 2016. Rice crop will be transplanted in the remaining plots during July 2016. After harvesting of rice and sugarcane (plant) crops, the residue incorporation/ trash mulching treatments will be applied. Sugarcane crop is progressing well in the field. The data on initial soil parameters, germination, tiller population, and growth attributes are being recorded. The details of treatments are being given below. 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 (trash incorporation through rotavator and with *Trichoderma i*ncorporation before sowing of wheat), T_7 : Sugarcane - Ratoon – Wheat (Zero tilled) without *Trichoderma* and T_8: Sugarcane - Ratoon – Wheat (Zero tilled) with *Trichoderma*. Minimum plot size was kept *as* 6 m x 4.5 m (27 m^2).

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

(V P Singh and S K Shukla)

A field experiment on "Agronomic performance of elite sugarcane genotypes (Early)" under AVT II programme of AICRP on Sugarcane was conducted on 27-02-2016 in randomized block design with 3 replications. Treatments comprised of 4 early elite genotypes viz., CoH 11262, CoLk 11201, CoLk 11202, CoLk 11203 along with 2 zonal checks viz., CoJ 64 and Co 0238. The performance of these elite genotypes are being evaluated at 125% of the RFD and at wider spacing of 120 cm row-to row distance. Planting was done on 27.02.2016 and 1/3rd N and entire P and K was applied at the time of planting as basal dose. Rest N will be applied in 2 splits on tillering and grand growth stages of the crop. Initial soil samples from entire experimental area was taken randomly and analysed the available N P K; which were 231.5, 33.34 and 215 kg/ha, respectively. The experiment is in progress.

AS72 (B) : Agronomic performance of elite sugarcane genotypes (Midlate)

(K.K.Singh and S.N.Singh)

An ACRIP experiment was planted on 23-2-2016 under RBD with three replications. The 8 sugarcane genotypes namely CoH 11263, CoPb 11214, Co Pant 97222, CoLk 11204, CoS 767, Co11027, CoLk 11206 and CoS8436 have been included in this trial. The planting was done at 1.2 m row distance with 25 % increase in the RDF (NPK). The 1/3rd N and entire P and K were applied at the time of sowing. The initial soil available N,P K were 231.5, 33.34 and 215 kg / ha respectively. The crop is in good condition.