



Fig. 1 Panicle and paddy images. A=Samba Mahsuri, B= BPCM1, C=BPCM2 and D= Chittimutyalu

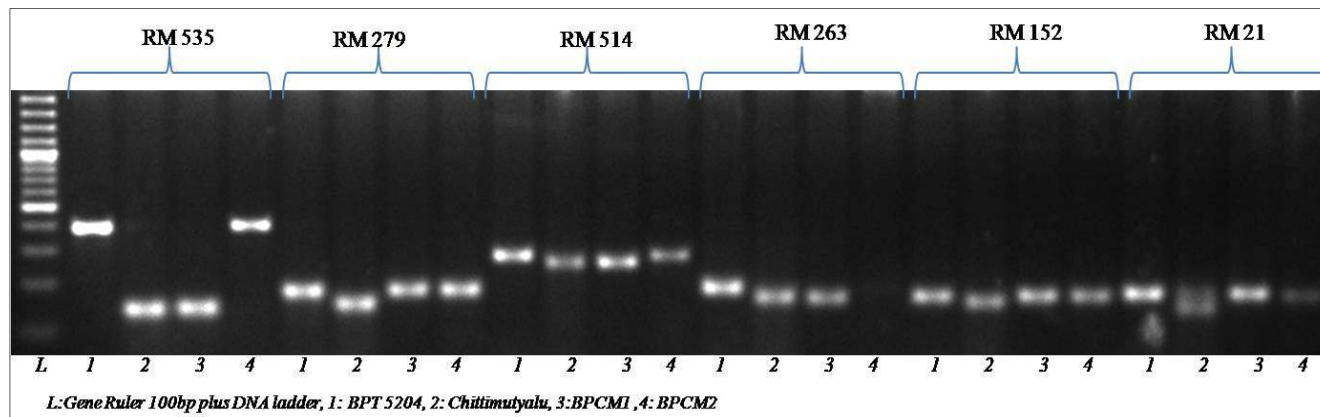


Fig. 2 DNA fingerprinting between the genotypes with RM markers

Table 1. Mean values of yield components and genetic parameters of four genotypes of rice (*Oryza sativa* L.).

Sl No	Yield component	Rice genotypes				CD	SE	Coefficient of Variations		Heritability
		BPCM-1	BPCM-2	SM	CTM			PCV	GCV	
1	Plant Height (cm)	89.7	98.2	81.7	132	3.38	0.75	22.06	22.04	0.99
2	Productive tillers per hill	14.5	17.2	12	19	1.84	0.41	19.73	19.38	0.97
3	Panicle Length (cm)	23.3	26.9	23.3	30.2	2.31	0.51	12.91	12.6	0.95
4	Total grains per panicle	163.7	240.2	158.5	265.7	15.26	3.39	26.17	26.07	0.99
5	Unfilled grains per panicle	45	38.2	31.2	13.7	2.17	0.48	42.1	42.05	0.99
6	Filled grains per panicle	118.7	202	127.3	252	17.25	3.83	36.36	36.23	0.99
7	Spikelet sterility percentage	72.5	84.1	80.3	94.9	2.25	0.5	11.22	11.18	0.99
8	Seed Yield Kg/ha	4959.8	5165.7	4746.1	3891.7	538.55	119.68	12.2	11.65	0.91
9	Straw Yield Kg/ha	5607.2	5478.4	5893	7448.4	968.47	215.21	15.33	14.5	0.89
10	Harvest index	88.5	94.4	80.6	52.3	10.96	2.44	23.81	23.4	0.97
11	Test weight	19.9	23.9	22.6	16.5	1.65	0.37	15.77	15.57	0.97
12	Days to 50 percent flowering	97	97.8	116.2	103.7	1.06	0.24	8.54	8.53	0.99
13	Days to maturity	126.7	127.5	144.3	129.2	2.19	0.49	6.3	6.28	0.99

SM-Samba Mahsuri, CTM-Chittimutyalu, CD- Critical difference for Treatments (5%) Level of Significance, SE-Standard Error mean for Treatments, PCV-Phenotypic Coefficient of Variation, GCV-Genotypic Coefficient of Variation, Kg/ha- kilograms per hector

Table 2. Mean values of grain quality and genetic parameters of four genotypes of rice (*Oryza sativa* L.)

Sl No	Grain quality component	Rice genotypes				CD	SE	Coefficient of Variations		Heritability
		BPCM-1	BPCM-2	SM	CTM			PCV	GCV	
1	Hulling percent	66	68.7	72.3	69.6	5.08	1.13	4.11	3.4	0.68
2	Milling percent	59.9	62.8	66.7	62.3	5.9	1.31	4.95	3.97	0.64
3	Head rice recovery percent	53.7	64.7	65.2	63.9	13.34	2.97	10.05	7.42	0.55
4	Kernel length (mm)	3.9	4.9	5	4.7	0.54	0.12	11.2	10.59	0.89
5	Kernel breadth (mm)	1.8	1.9	1.8	2.1	0.16	0.04	7.29	6.78	0.86
6	Length / Breadth Ratio (mm)	2.1	2.6	2.7	2.2	0.15	0.03	11.88	11.72	0.97
7	Grain chalk percent	10.8	10.2	1	9.1	1.45	0.32	58.97	58.68	0.99
8	Alkali spreading value	5.5	6.1	4.2	5.2	0.71	0.16	15.54	14.94	0.92
9	Gel consistency (mm)	21.5	23.7	35.5	24	5.23	1.16	24.52	23.71	0.93
10	Amylose content percent	23.3	25	24.7	25	0.37	0.08	3.38	3.34	0.98
11	Elongation ratio	1.8	2.2	2.1	1.8	0.05	0.01	10.18	10.15	0.99
12	Water uptake (ml)	117.8	186.9	178.6	123.5	9.15	2.03	23.83	23.75	0.99
13	Kernel length after cooking (mm)	8.3	11.6	10.5	8.5	0.36	0.08	16.38	16.34	0.99
14	Volume expansion ratio (mm)	5.6	5.1	4.7	5.6	0.75	0.17	9.07	7.88	0.75

SM-Samba Mahsuri, CTM-Chittimutyalu, CD- Critical difference for Treatments (5%) Level of Significance, SE-Standard Error mean for Treatments, PCV-Phenotypic Coefficient of Variation, GCV-Genotypic Coefficient of Variation.

Table 3. Mean values of nutritional content and genetic parameters of four genotypes of rice (*Oryza sativa* L.)

Sl No	Nutritional content	Rice genotypes				CD	SE	Coefficient of Variations		Heritability
		BPCM-1	BPCM-2	SM	CTM			PCV	GCV	
1	Polished rice Protein percentage	7.1	6.9	6.5	7.3	0.65	0.14	5.61	4.79	0.73
2	Zinc before polish (ppm)	29.6	33.5	16	34.9	4.45	0.99	30.53	30.14	0.97
3	Zn after polish (ppm)	20.6	24	10.1	28.5	5.19	1.15	38.19	37.37	0.96
4	Fe before polish (ppm)	14.1	16	10.4	15.4	3.2	0.71	18.69	17.24	0.85
5	Fe after polish (ppm)	3.6	4.3	2	4.4	1.73	0.38	33.62	29.97	0.79

SM-Samba Mahsuri, CTM-Chittimutyalu, CD- Critical difference for Treatments (5%) Level of Significance, SE-Standard Error mean for Treatments, PCV-Phenotypic Coefficient of Variation, GCV-Genotypic Coefficient of Variation.

Table 4. Correlation matrix of yield characters for four genotypes of rice (*Oryza sativa* L.)

		Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13
Y1	G	1	0.91**	0.97**	0.88*	-0.8	0.92**	0.87*	-0.84*	0.90**	-0.82*	-0.77	-0.26	-0.46
	P		0.89*	0.95**	0.88*	-0.8	0.92**	0.87*	-0.79	0.86*	-0.81*	-0.76	-0.25	-0.45
Y2	G		1	0.97**	0.96**	-0.52	0.93**	0.75	-0.5	0.58	-0.48	-0.52	-0.58	-0.73
	P			0.90**	0.95**	-0.51	0.92**	0.73*	-0.46	0.59	-0.49	-0.48	-0.57	-0.71
Y3	G			1	0.99**	-0.78	0.99**	0.94**	-0.73	0.81*	-0.72	-0.54	-0.25	-0.44
	P				0.96**	-0.77	0.98**	0.92**	-0.64	0.74	-0.66	-0.55	-0.24	-0.42
Y4	G				1	-0.64	0.99**	0.87*	-0.52	0.61	-0.51	-0.37	-0.36	-0.51
	P					-0.64	0.99**	0.87*	-0.48	0.6	-0.51	-0.36	-0.35	-0.5
Y5	G					1	-0.76	-0.92**	0.96**	-0.97**	0.95**	0.65	-0.37	-0.16
	P						-0.76	-0.92**	0.90*	-0.93**	0.93**	0.64	-0.37	-0.17
Y6	G						1	0.94**	-0.65	0.73	-0.64	-0.46	-0.23	-0.4
	P							0.94**	-0.6	0.71	-0.63	-0.45	-0.22	-0.39
Y7	G							1	-0.79	0.85*	-0.79	-0.47	0.12	-0.07
	P								-0.74	0.81*	-0.77	-0.47	0.12	-0.06
Y8	G								1	-0.99**	0.99**	0.90**	-0.27	-0.05
	P									-0.91**	0.98**	0.84*	-0.25	-0.04
Y9	G									1	-0.99**	-0.91**	0.18	-0.05
	P										-0.97**	-0.81*	0.18	-0.03
Y10	G										1	0.89*	-0.27	-0.05
	P											0.83*	-0.27	-0.06
Y11	G											1	0.11	0.3
	P												0.11	0.3
Y12	G												1	0.98**
	P													0.97**
Y13	G													1
	P													

G=Genotypic Correlations Matrix, P= Phenotypic Correlations Matrix; *Significant at $p < 0.05$, ** Significant at $p < 0.01$;

Y1-Plant Height (cm), Y2-Productive tillers per hill, Y3-Panicle Length (cm), Y4-Total grains per panicle, Y5-Unfilled grains per panicle, Y6-Filled grains per panicle, Y7-Spikelet sterility %, Y8-Seed Yield Kg/ha, Y9-Straw Yield Kg/ha, Y10-Harvest index, Y11-Test weight, Y12- Days to 50% flowering and Y13-Days to maturity.

Table 5. Correlation matrix of quality parameters for four genotypes of rice (*Oryza sativa* L.)

		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14
Q1	G		0.99**	0.94**	0.86*	-0.03	0.86*	-0.99**	-0.89*	0.94**	0.72*	0.57	0.63	0.48	-0.99**
	P	1	0.95**	0.79	0.85*	0.13	0.76	-0.79	-0.64	0.87*	0.66	0.5	0.56	0.43	-0.51
Q2	G			0.73	0.85*	-0.28	0.99**	-0.99**	-0.86*	0.99**	0.61	0.72	0.78	0.62	-0.99**
	P		1	0.79	0.8	-0.1	0.84*	-0.82*	-0.66	0.90*	0.53	0.62	0.65	0.53	-0.61
Q3	G				0.99**	0.43	0.84*	-0.64	-0.29	0.64	0.99**	0.73	0.81*	0.74	-0.94**
	P			1	0.89*	0.35	0.66	-0.42	-0.28	0.5	0.84*	0.58	0.61	0.57	-0.37
Q4	G					0.19	0.84*	-0.59	-0.34	0.61	0.93**	0.76	0.81*	0.75	-0.88*
	P				1	0.26	0.82*	-0.54	-0.26	0.63	0.91**	0.74	0.78	0.72	-0.57
Q5	G						-0.37	0.36	0.18	-0.42	0.59	-0.38	-0.34	-0.3	0.53
	P					1	-0.35	0.33	0.24	-0.29	0.58	-0.35	-0.3	-0.28	0.52
Q6	G							-0.77	-0.45	0.83*	0.54	0.92**	0.94**	0.86*	-0.99**
	P						1	-0.75	-0.43	0.8	0.54	0.91**	0.93**	0.85*	-0.88*
Q7	G								0.94**	-0.99**	-0.27	-0.44	-0.49	-0.32	0.83*
	P							1	0.89*	-0.98**	-0.26	-0.43	-0.48	-0.31	0.76
Q8	G									-0.94**	-0.09	-0.04	-0.1	0.1	0.52
	P								1	-0.82*	-0.05	-0.04	-0.09	0.09	0.46
Q9	G										0.31	0.53	0.57	0.41	-0.97**
	P									1	0.32	0.51	0.56	0.39	-0.74
Q10	G											0.51	0.56	0.54	-0.43
	P										1	0.51	0.56	0.54	-0.32
Q11	G												0.99**	0.99**	-0.98**
	P											1	0.99**	0.99**	-0.81*
Q12	G													0.98**	-0.99**
	P												1	0.98**	-0.82*
Q13	G														-0.89*
	P													1	-0.74
Q14	G														
	P														1

G=Genotypic Correlations Matrix, P= Phenotypic Correlations Matrix; *Significant at $p < 0.05$, ** Significant at $p < 0.01$

Q1-Hulling %, Q2-Milling %, Q3-Head Rice Recovery %, Q4-Kernel Length (mm), Q5-Kernel Breadth (mm), Q6-L/B Ratio (mm), Q7-Grain Chalk (%), Q8-Alkali spreading value, Q9-Gel Consistency. Q10-Amylose content %, Q11-Elongation ratio, Q12-Water uptake, Q13-Kernel Length after cooking (mm) and Q14-Volume Expansion Ratio (mm)

Table 6. Correlation matrixis of nutritional content for four genotypes of rice (*Oryza sativa* L.)

		N1	N2	N3	N4	N5
N1	G	1	0.95**	0.97**	0.8	0.94**
	P		0.85*	0.89*	0.79	0.8
N2	G		1	0.98**	0.99**	0.99**
	P			0.98**	0.97**	0.92**
N3	G			1	0.95**	0.99**
	P				0.93**	0.90*
N4	G				1	0.99**
	P					0.89*
N5	G					1
	P					

G=Genotypic Correlations Matrix, P= Phenotypic Correlations Matrix; *Significant at $p < 0.05$, ** Significant at $p < 0.01$

N1-Protein % in Polished Rice, N2-Zn Before Polish (ppm), N3-Zn After Polish (ppm), N4-Fe Before Polish (ppm) and N5-Fe After Polish (ppm)

Table 7. Allele sizes compared with 100 base pair ladder for four genotypes of rice (*Oryza sativa* L.)

SL No	Primer ID	Chromosome Number	BPCM1	BPCM2	Samba Mahsuri	Chittimutyalu
1	RM1	1	110	110	110	80
2	RM5	1	110	110	110	120
3	RM535	2	140	400	400	140
4	RM279	2	190	190	190	160
5	RM263	2	170	190	190	170
6	RM12469	2	180	160	180	160
7	RM13347	2	180	160	180	160
8	RM514	3	270	295	295	270
9	RM85	3	110	110	110	90
10	RM1359	4	110	110	110	120
11	RM169	5	170	170	190	170
12	RM190	6	140	140	140	150
13	RM152	8	170	170	170	160
14	RM22885	8	120	120	120	100
15	RM160	9	140	140	140	150
16	RM24829	9	180	180	180	200
17	RM3912	9	190	210	190	210
18	RM21	11	175	175	175	140