



**Supplementary Figure S1:** Field Layout Plan of Randomized Complete Block Design for 24 Genotypes including 18 Mutants, 3 Parents and 3 Checks during all three seasons



**Supplementary Table S2:** Mean performance of 24 rice genotypes for 13 agro-morphological traits taken during three consecutive seasons/ generations

Genotypes	Season/Year	Generation	DFF	PH	PL	FLL	FLW	TTP	ETP	FSP	SSP	TSP	SF%	HSW	GYP
Samundchini Mutant S-49	<i>Kharif</i> 2019	M <sub>4</sub>	117	117.48	25.80	25.25	0.63	38	28	133	50	182	72.81	0.88	22.11
	<i>Rabi</i> 2019-20	M <sub>5</sub>	118	107.25	26.68	23.83	0.48	39	17	111	45	156	70.94	0.86	18.15
	<i>Kharif</i> 2020	M <sub>6</sub>	121	117.05	27.58	25.93	0.45	34	25	109	42	151	72.41	0.85	21.50
Samundchini Mutant S-18-1	<i>Kharif</i> 2019	M <sub>4</sub>	114	121.50	30.25	24.98	1.45	10	9	184	39	223	82.77	1.01	27.23
	<i>Rabi</i> 2019-20	M <sub>5</sub>	119	113.75	30.58	22.25	1.33	11	13	226	43	269	84.19	1.03	27.11
	<i>Kharif</i> 2020	M <sub>6</sub>	118	121.90	28.58	25.14	1.22	10	9	243	59	302	80.63	0.97	30.49
Samundchini Mutant S-50	<i>Kharif</i> 2019	M <sub>4</sub>	116	124.50	29.35	24.05	1.43	9	8	171	45	216	79.19	1.00	27.15
	<i>Rabi</i> 2019-20	M <sub>5</sub>	119	118.00	30.30	26.45	1.15	10	13	195	40	234	83.12	1.04	23.02
	<i>Kharif</i> 2020	M <sub>6</sub>	118	124.25	29.08	25.75	1.26	10	9	198	55	253	78.37	0.96	27.64
Samundchini Parent	<i>Kharif</i> 2019	Parent	128.5	181.00	30.38	27.81	1.33	9	9	158	46	204	77.59	1.05	22.80
	<i>Rabi</i> 2019-20	Parent	131	139.00	29.15	28.80	1.38	10	11	182	44	226	80.54	1.06	22.08
	<i>Kharif</i> 2020	Parent	130	175.78	31.57	28.63	1.37	9	8	165	64	229	72.21	1.07	24.40
Vishnubhog Mutant V-17	<i>Kharif</i> 2019	M <sub>4</sub>	109	120.25	22.13	30.45	0.75	37	26	77	49	126	61.10	1.34	11.11
	<i>Rabi</i> 2019-20	M <sub>5</sub>	117.5	97.75	21.48	31.75	0.63	37	26	111	44	154	71.78	1.05	11.21
	<i>Kharif</i> 2020	M <sub>6</sub>	112.5	111.85	23.08	33.30	0.62	28	20	70	47	116	60.00	1.52	12.71
Vishnubhog Mutant V-19-2	<i>Kharif</i> 2019	M <sub>4</sub>	108	97.05	18.88	33.60	1.23	8	8	162	56	217	74.42	1.52	15.50
	<i>Rabi</i> 2019-20	M <sub>5</sub>	112	82.00	17.60	28.95	1.38	14	13	132	41	173	76.20	1.35	19.54
	<i>Kharif</i> 2020	M <sub>6</sub>	101	95.43	18.92	31.82	1.37	16	15	124	31	154	80.15	1.53	17.85
Vishnubhog Mutant V-74-6	<i>Kharif</i> 2019	M <sub>4</sub>	107	111.33	25.45	33.63	1.56	8	7	197	44	241	81.91	1.44	25.55
	<i>Rabi</i> 2019-20	M <sub>5</sub>	117	102.00	26.33	31.85	1.48	13	13	222	53	275	80.70	1.31	27.25
	<i>Kharif</i> 2020	M <sub>6</sub>	101.5	109.58	24.35	33.33	1.52	12	9	170	42	212	80.14	1.31	27.36
Vishnubhog Mutant V-47	<i>Kharif</i> 2019	M <sub>4</sub>	107.5	106.42	24.47	29.93	1.39	8	8	157	57	214	73.31	1.12	17.50
	<i>Rabi</i> 2019-20	M <sub>5</sub>	116.5	96.50	23.81	29.15	1.36	15	15	141	42	183	77.06	1.06	19.00
	<i>Kharif</i> 2020	M <sub>6</sub>	109	95.92	20.64	28.61	1.53	11	12	158	50	208	75.98	1.43	18.11
Vishnubhog Mutant V-45	<i>Kharif</i> 2019	M <sub>4</sub>	96	103.50	26.40	34.13	2.08	9	9	176	47	223	78.91	1.38	21.50
	<i>Rabi</i> 2019-20	M <sub>5</sub>	113	91.25	19.28	32.00	1.90	11	16	161	52	213	75.60	1.27	23.83
	<i>Kharif</i> 2020	M <sub>6</sub>	102	107.75	23.63	33.40	2.00	9	8	171	58	229	74.85	1.33	22.87
Vishnubhog Mutant V-33	<i>Kharif</i> 2019	M <sub>4</sub>	112	104.25	23.50	34.18	2.08	11	11	180	44	224	80.59	1.39	24.00
	<i>Rabi</i> 2019-20	M <sub>5</sub>	118	104.50	24.25	33.03	1.35	14	13	166	48	214	77.75	1.41	23.77
	<i>Kharif</i> 2020	M <sub>6</sub>	111	102.83	25.45	35.61	1.64	11	6	163	53	216	75.43	1.50	24.71
Vishnubhog Mutant V-45-2	<i>Kharif</i> 2019	M <sub>4</sub>	106	129.00	24.20	41.25	1.49	10	10	161	61	222	72.50	1.44	18.25
	<i>Rabi</i> 2019-20	M <sub>5</sub>	119	125.00	22.63	37.00	1.53	12	13	196	45	241	81.49	1.46	21.41
	<i>Kharif</i> 2020	M <sub>6</sub>	112.5	128.45	24.93	36.48	1.53	9	7	212	53	265	80.08	1.48	20.62
Vishnubhog Mutant V-67	<i>Kharif</i> 2019	M <sub>4</sub>	112.5	101.25	17.88	24.03	1.70	9	9	102	61	163	62.70	1.40	13.00
	<i>Rabi</i> 2019-20	M <sub>5</sub>	119	77.00	18.15	18.05	1.28	11	11	88	53	141	62.42	1.47	11.07
	<i>Kharif</i> 2020	M <sub>6</sub>	115	98.59	19.79	24.22	1.70	7	7	104	72	176	59.26	1.39	13.20
Vishnubhog	<i>Kharif</i> 2019	M <sub>4</sub>	96	105.00	25.40	32.13	1.60	11	11	215	44	259	83.08	1.36	26.19

Mutant V-71-4	Rabi 2019-20	M <sub>5</sub>	112	90.00	22.85	31.10	1.52	13	14	192	45	237	80.99	1.36	26.67
	Kharif 2020	M <sub>6</sub>	97	105.25	22.38	31.59	1.50	11	10	192	33	224	85.36	1.81	26.17
Vishnubhog Mutant V-80	Kharif 2019	M <sub>4</sub>	94	115.50	24.72	27.08	1.55	9	9	189	44	233	81.09	1.37	20.88
	Rabi 2019-20	M <sub>5</sub>	113	108.45	23.80	28.05	1.40	12	10	187	47	234	79.88	1.18	21.68
	Kharif 2020	M <sub>6</sub>	95.5	115.10	24.94	26.57	1.60	10	9	185	45	230	80.60	1.35	21.22
Vishnubhog Parent	Kharif 2019	Parent	121	147.25	25.10	36.83	1.57	9	9	165	49	214	77.31	1.23	18.50
	Rabi 2019-20	Parent	125	133.50	23.85	32.50	1.47	11	14	163	44	207	78.93	1.36	20.87
	Kharif 2020	Parent	118.5	150.33	23.58	42.08	1.56	8	7	163	63	226	72.03	1.44	19.20
Jhilli Mutant J-2-13	Kharif 2019	M <sub>4</sub>	87	104.75	28.25	35.00	1.43	10	9	132	51	183	72.06	1.81	20.75
	Rabi 2019-20	M <sub>5</sub>	107	101.58	25.50	36.13	1.51	10	15	120	49	169	71.72	1.86	18.47
	Kharif 2020	M <sub>6</sub>	87	100.09	23.95	33.53	1.52	9	8	101	37	138	73.65	1.86	19.40
Jhilli Mutant J-12-1	Kharif 2019	M <sub>4</sub>	86.5	107.00	29.00	28.50	1.63	10	9	176	45	221	79.58	2.20	23.95
	Rabi 2019-20	M <sub>5</sub>	113	100.63	20.68	33.85	1.58	11	10	150	41	190	78.72	2.12	21.06
	Kharif 2020	M <sub>6</sub>	88	97.49	26.16	28.28	1.49	10	9	159	30	189	83.95	2.31	24.30
Jhilli Mutant J-13-2	Kharif 2019	M <sub>4</sub>	89	107.75	19.20	32.75	1.70	13	12	172	51	223	77.31	1.26	21.45
	Rabi 2019-20	M <sub>5</sub>	113.5	101.45	22.83	31.78	1.59	11	9	147	49	195	75.14	1.21	18.58
	Kharif 2020	M <sub>6</sub>	93.5	100.88	22.95	33.58	1.53	8	7	154	48	202	76.44	1.21	19.90
Jhilli Dhan J- 13-5	Kharif 2019	M <sub>4</sub>	89.5	111.75	28.00	34.50	1.48	10	10	191	42	233	81.97	2.40	25.83
	Rabi 2019-20	M <sub>5</sub>	108	99.50	24.08	31.03	1.46	13	14	151	34	185	81.48	1.65	27.08
	Kharif 2020	M <sub>6</sub>	89	109.13	25.57	32.69	1.45	11	10	162	35	197	82.57	2.31	25.91
Jhilli Mutant J-15-1	Kharif 2019	M <sub>4</sub>	86.5	105.75	25.25	33.00	1.39	12	12	182	48	230	79.32	2.34	23.70
	Rabi 2019-20	M <sub>5</sub>	109.5	91.75	24.55	29.10	1.47	13	14	152	40	192	79.16	2.10	23.56
	Kharif 2020	M <sub>6</sub>	90.5	102.80	23.78	29.55	1.55	9	8	169	40	209	80.68	2.48	25.01
Jhilli Dhan Parent	Kharif 2019	Parent	116	168.25	27.50	36.25	1.48	10	10	157	49	206	76.46	2.10	21.25
	Rabi 2019-20	Parent	124	142.75	24.05	32.95	1.47	11	9	150	49	198	75.54	1.67	20.52
	Kharif 2020	Parent	117.5	170.67	23.21	36.48	1.48	9	9	152	31	183	83.04	2.24	20.80
Dubraj selection -1	Kharif 2019	Check 1	115	150.50	22.48	37.40	1.25	8	7	126	37	163	77.34	1.73	19.01
	Rabi 2019-20	Check 1	129	133.50	22.48	33.31	1.33	10	9	152	44	196	77.77	1.63	18.75
	Kharif 2020	Check 1	110	152.93	22.65	36.65	1.28	9	8	152	60	212	71.75	1.94	18.25
Vishnubhog Selection-1	Kharif 2019	Check 2	114	148.25	26.35	29.15	1.30	11	10	150	49	199	75.34	1.34	20.87
	Rabi 2019-20	Check 2	130.5	136.00	24.00	32.95	1.37	11	11	156	45	201	77.55	1.35	21.04
	Kharif 2020	Check 2	109	149.75	23.98	32.60	1.33	11	10	154	55	209	73.87	1.50	20.25
Rajeshwari	Kharif 2019	Check 3	94.5	123.00	25.50	33.00	1.59	11	10	164	29	192	85.17	3.05	27.40
	Rabi 2019-20	Check 3	104	114.00	24.00	30.50	1.50	12	10	179	32	211	84.81	3.19	28.42
	Kharif 2020	Check 3	94.5	123.50	25.00	32.50	1.57	11	10	172	36	208	82.64	3.18	28.09

**Supplementary Table S3:** Mean performance of 24 rice genotypes for 18 grain quality traits taken during three consecutive seasons/ generations

Genotypes	Season/Year	Generation	Hul%	Mil%	HRR%	PadL	PadB	BRL	BRB	KL	KB	KLBR	CRL	CRW	ER	ASV	GC	AC%	Aroma
Samundchini Mutant S-49	<i>Kharif</i> 19	M <sub>4</sub>	73.66	64.51	58.31	6.81	2.25	5.26	1.80	4.85	1.65	2.97	6.25	2.85	1.29	4	62.5	21.0	High
	<i>Rabi</i> 19-20	M <sub>5</sub>	72.36	64.01	57.81	6.80	2.25	5.25	1.80	4.90	1.65	2.97	6.20	2.80	1.27	4	62.5	20.3	High
	<i>Kharif</i> 20	M <sub>6</sub>	74.44	67.06	54.95	6.80	2.20	5.20	1.80	4.60	1.60	2.89	5.40	2.80	1.17	4	60.5	23.8	High
Samundchini Mutant S-18-1	<i>Kharif</i> 19	M <sub>4</sub>	78.84	69.98	61.30	6.29	2.45	4.20	1.79	3.85	1.70	2.26	7.81	2.63	2.03	3	52.5	23.5	Mild
	<i>Rabi</i> 19-20	M <sub>5</sub>	80.04	71.48	65.30	6.20	2.45	4.15	1.75	3.85	1.70	2.26	7.80	2.60	2.03	3	55.0	23.8	Mild
	<i>Kharif</i> 20	M <sub>6</sub>	84.76	71.56	62.20	6.20	2.40	4.40	2.00	4.10	1.80	2.28	5.00	2.40	1.22	2	46.5	24.2	Mild
Samundchini Mutant S-50	<i>Kharif</i> 19	M <sub>4</sub>	78.29	63.89	57.45	5.81	2.40	4.83	2.11	4.50	1.95	2.31	7.43	3.06	1.65	4	57.0	25.0	Mild
	<i>Rabi</i> 19-20	M <sub>5</sub>	78.51	63.89	59.95	5.80	2.40	4.85	2.05	4.50	1.95	2.31	7.40	3.00	1.64	4	57.0	24.5	Mild
	<i>Kharif</i> 20	M <sub>6</sub>	73.78	63.16	55.16	5.80	2.40	4.80	1.80	3.80	1.75	2.17	6.00	2.60	1.58	2	45.5	23.7	Mild
Samundchini Parent	<i>Kharif</i> 19	P	77.97	67.05	57.20	6.36	2.41	5.81	2.05	4.88	2.01	2.43	8.22	2.83	1.69	4	59.0	24.5	Mild
	<i>Rabi</i> 19-20	P	77.35	67.05	60.20	6.40	2.40	5.80	2.05	4.90	2.00	2.45	8.20	2.80	1.67	4	60.0	23.0	Mild
	<i>Kharif</i> 20	P	75.40	60.90	54.97	6.40	2.40	4.60	2.20	4.15	2.05	2.03	6.00	2.80	1.45	3	42.5	24.1	Mild
Vishnubhog Mutant V-17	<i>Kharif</i> 19	M <sub>4</sub>	78.73	64.88	57.22	6.72	2.59	4.68	2.05	4.13	2.11	1.93	6.98	3.21	1.69	4	56.0	18.6	High
	<i>Rabi</i> 19-20	M <sub>5</sub>	78.07	67.38	59.22	6.80	2.55	4.65	2.05	4.05	2.10	1.93	7.00	3.20	1.73	4	57.5	19.1	High
	<i>Kharif</i> 20	M <sub>6</sub>	76.30	71.21	58.08	6.80	2.60	5.00	2.20	4.20	1.95	2.16	6.40	2.60	1.52	4	47.5	23.5	High
Vishnubhog Mutant V-19-2	<i>Kharif</i> 19	M <sub>4</sub>	79.38	68.69	60.99	6.46	2.75	4.41	2.41	2.62	2.28	1.15	6.43	3.03	3.43	3	75.5	24.3	Mild
	<i>Rabi</i> 19-20	M <sub>5</sub>	78.79	68.69	60.84	6.40	2.75	4.40	2.40	4.05	2.25	1.80	6.40	3.00	1.58	3	76.5	22.8	Mild
	<i>Kharif</i> 20	M <sub>6</sub>	73.90	61.46	51.17	6.40	2.80	4.40	2.20	4.00	2.10	1.90	7.20	3.00	1.80	3	87.5	20.0	Mild
Vishnubhog Mutant V-74-6	<i>Kharif</i> 19	M <sub>4</sub>	74.83	68.85	69.60	6.41	2.61	4.56	2.38	4.26	2.26	1.88	6.78	3.03	1.59	5	56.5	24.4	Mild
	<i>Rabi</i> 19-20	M <sub>5</sub>	77.80	68.85	65.10	6.40	2.60	4.55	2.35	4.45	2.25	1.98	6.80	3.00	1.53	5	59.0	23.9	Mild
	<i>Kharif</i> 20	M <sub>6</sub>	81.56	65.97	60.11	6.40	2.60	4.20	2.00	4.20	1.90	2.21	6.00	3.20	1.43	5	57.5	26.2	Mild
Vishnubhog Mutant V-47	<i>Kharif</i> 19	M <sub>4</sub>	72.17	66.55	61.29	6.53	2.60	4.56	2.08	4.38	1.98	2.23	6.98	3.06	1.59	2	64.0	24.4	Absent
	<i>Rabi</i> 19-20	M <sub>5</sub>	74.55	67.55	59.29	6.50	2.60	4.55	2.05	4.35	1.95	2.23	7.00	3.00	1.61	2	64.0	23.9	Absent
	<i>Kharif</i> 20	M <sub>6</sub>	68.62	60.70	54.78	6.60	2.60	4.20	2.00	4.00	1.75	2.29	5.20	3.00	1.30	2	57.0	21.6	Absent
Vishnubhog Mutant V-45	<i>Kharif</i> 19	M <sub>4</sub>	78.19	67.50	56.87	6.00	2.85	4.27	2.55	4.13	2.38	1.74	7.58	3.23	1.84	2	68.5	24.0	Mild
	<i>Rabi</i> 19-20	M <sub>5</sub>	73.82	66.00	56.87	6.00	2.85	4.20	2.50	4.00	2.40	1.67	7.60	3.20	1.90	2	67.5	23.5	Mild
	<i>Kharif</i> 20	M <sub>6</sub>	76.21	65.65	58.25	6.00	2.80	4.00	2.00	3.75	1.80	2.09	5.40	3.20	1.44	2	42.5	23.6	Mild
Vishnubhog Mutant V-33	<i>Kharif</i> 19	M <sub>4</sub>	73.39	68.88	61.34	6.06	3.15	4.16	2.38	4.21	2.23	1.87	6.63	3.23	1.58	5	59.0	28.9	Mild
	<i>Rabi</i> 19-20	M <sub>5</sub>	75.22	68.88	61.34	6.00	3.15	4.15	2.35	4.20	2.25	1.87	6.60	3.20	1.57	5	53.0	27.9	Mild
	<i>Kharif</i> 20	M <sub>6</sub>	79.08	69.06	60.66	6.00	3.20	4.40	2.60	4.05	2.50	1.62	5.80	3.00	1.43	5	36.0	28.2	Mild
Vishnubhog Mutant V-45-2	<i>Kharif</i> 19	M <sub>4</sub>	71.18	63.62	59.34	5.33	2.69	3.90	2.43	3.96	2.13	1.88	7.03	2.83	1.78	3	70.5	24.4	Absent
	<i>Rabi</i> 19-20	M <sub>5</sub>	71.77	63.62	57.84	5.20	2.65	3.90	2.35	3.95	2.10	1.88	7.00	2.80	1.77	3	69.0	23.9	Absent
	<i>Kharif</i> 20	M <sub>6</sub>	74.12	64.47	58.82	5.20	2.60	4.00	2.20	3.60	2.00	1.80	6.60	3.00	1.84	3	55.0	23.4	Absent
Vishnubhog Mutant V-67	<i>Kharif</i> 19	M <sub>4</sub>	68.76	61.73	53.65	5.51	3.25	4.01	2.06	3.84	1.95	1.97	6.66	3.05	1.73	2	96.5	18.4	Mild
	<i>Rabi</i> 19-20	M <sub>5</sub>	70.76	61.73	54.15	5.40	3.25	4.00	2.05	3.80	1.90	2.01	6.60	3.00	1.74	2	96.5	19.0	Mild
	<i>Kharif</i> 20	M <sub>6</sub>	75.31	66.25	54.37	5.40	3.20	3.80	2.00	3.40	1.90	1.79	6.00	3.00	1.76	2	91.5	20.3	Mild
Vishnubhog Mutant V-71-4	<i>Kharif</i> 19	M <sub>4</sub>	79.88	70.63	63.32	6.41	2.86	4.78	2.21	4.21	2.13	1.98	7.23	3.03	1.72	5	62.5	25.8	Mild

	<i>Rabi</i> 19-20	M <sub>5</sub>	77.51	67.13	59.82	6.40	2.85	4.75	2.20	4.20	2.10	2.00	7.20	3.00	1.71	5	57.5	25.0	Mild
	<i>Kharif</i> 20	M <sub>6</sub>	72.23	65.32	55.91	6.40	2.80	4.60	2.00	4.20	1.90	2.21	7.20	3.00	1.71	5	52.0	23.5	Mild
Vishnubhog Mutant V-80	<i>Kharif</i> 19	M <sub>4</sub>	79.25	70.08	66.64	6.16	2.00	4.43	2.00	4.08	1.83	2.23	5.18	2.48	1.27	4	36.0	27.2	Strong
	<i>Rabi</i> 19-20	M <sub>5</sub>	78.79	70.58	65.14	6.10	2.00	4.45	1.95	4.05	1.85	2.19	5.20	2.40	1.28	5	37.0	26.4	Strong
	<i>Kharif</i> 20	M <sub>6</sub>	73.85	65.53	56.69	6.00	2.20	4.40	2.00	4.00	1.80	2.23	5.20	2.40	1.30	4	33.5	27.6	Strong
Vishnubhog Parent	<i>Kharif</i> 19	P	76.62	66.44	55.41	5.83	2.80	4.56	2.21	4.43	2.12	2.09	6.58	3.03	1.49	4	61.0	24.4	Low
	<i>Rabi</i> 19-20	P	76.81	63.94	54.41	5.80	2.80	4.60	2.20	4.45	2.05	2.17	6.60	3.00	1.48	4	59.0	23.5	Low
	<i>Kharif</i> 20	P	74.31	62.32	54.72	5.80	2.80	4.40	2.40	4.20	2.20	1.91	5.40	3.00	1.29	4	53.5	22.2	Low
Jhilli Mutant J-2-13	<i>Kharif</i> 19	M <sub>4</sub>	79.88	72.30	63.68	8.71	2.49	6.76	1.96	6.43	1.88	3.43	8.21	2.48	1.23	6	90.0	18.5	Absent
	<i>Rabi</i> 19-20	M <sub>5</sub>	79.90	71.80	62.68	8.80	2.45	6.80	1.95	6.45	1.85	3.49	8.20	2.40	1.23	6	92.5	17.9	Absent
	<i>Kharif</i> 20	M <sub>6</sub>	70.69	63.33	54.45	8.80	2.40	6.20	1.95	6.41	1.75	3.66	8.00	3.00	1.60	6	75.0	18.6	Absent
Jhilli Mutant J-12-1	<i>Kharif</i> 19	M <sub>4</sub>	77.97	68.90	58.03	7.61	2.25	6.46	2.01	6.28	1.88	3.38	7.26	2.83	1.16	4	66.5	27.1	Mild
	<i>Rabi</i> 19-20	M <sub>5</sub>	78.00	67.40	56.53	7.60	2.25	6.45	1.95	6.25	1.85	3.38	7.20	2.80	1.15	4	62.5	26.2	Mild
	<i>Kharif</i> 20	M <sub>6</sub>	72.50	61.48	54.39	7.60	2.20	6.40	2.00	6.29	1.80	3.49	8.60	3.00	1.16	5	45.0	24.5	Mild
Jhilli Mutant J-13-2	<i>Kharif</i> 19	M <sub>4</sub>	73.61	64.81	55.17	7.29	2.61	5.41	2.22	5.48	2.06	2.64	6.96	2.63	1.27	1	63.5	26.5	Absent
	<i>Rabi</i> 19-20	M <sub>5</sub>	73.70	63.31	56.67	7.20	2.60	5.40	2.15	5.40	2.05	2.64	7.00	2.60	1.30	1	65.0	26.3	Absent
	<i>Kharif</i> 20	M <sub>6</sub>	76.31	68.95	57.76	7.20	2.60	5.00	2.00	5.42	2.02	2.68	6.80	3.00	1.62	1	45.5	24.3	Absent
Jhili Dhan J-13-5	<i>Kharif</i> 19	M <sub>4</sub>	83.55	75.65	60.71	8.92	2.35	6.44	2.05	6.01	1.83	3.16	8.05	2.55	1.39	5	47.5	26.1	Absent
	<i>Rabi</i> 19-20	M <sub>5</sub>	81.81	72.65	58.71	9.00	2.35	6.40	2.05	6.02	1.80	3.22	8.00	2.60	1.38	5	47.5	24.4	Absent
	<i>Kharif</i> 20	M <sub>6</sub>	77.87	63.70	56.53	9.00	2.40	6.60	2.00	6.00	1.80	2.90	7.60	3.20	1.46	5	50.0	24.4	Absent
Jhilli Mutant J-15-1	<i>Kharif</i> 19	M <sub>4</sub>	75.65	67.64	58.23	9.40	2.45	6.91	1.80	6.28	1.68	3.79	9.03	2.35	1.44	5	42.5	26.5	Absent
	<i>Rabi</i> 19-20	M <sub>5</sub>	77.53	68.64	56.73	9.40	2.45	6.85	1.80	6.25	1.65	3.79	9.00	2.40	1.44	5	38.0	26.0	Absent
	<i>Kharif</i> 20	M <sub>6</sub>	78.24	69.75	58.61	9.40	2.40	7.40	2.00	6.00	1.75	3.43	8.60	2.80	1.43	5	42.5	21.6	Absent
Jhilli Dhan Parent	<i>Kharif</i> 19	P	77.77	68.91	57.21	8.61	2.41	6.69	2.05	6.18	2.06	3.16	8.65	2.38	1.40	4	63.5	27.3	Absent
	<i>Rabi</i> 19-20	P	78.22	67.91	58.71	8.60	2.40	6.20	2.00	6.15	1.95	3.16	8.60	2.40	1.40	4	61.0	26.8	Absent
	<i>Kharif</i> 20	P	75.43	65.27	56.28	8.60	2.40	6.00	2.00	5.40	1.85	2.94	7.00	2.40	1.30	4	42.5	27.4	Absent
Dubraj selection -1	<i>Kharif</i> 19	Ch1	76.28	66.60	53.18	8.05	2.41	6.22	2.15	5.96	2.11	2.88	9.48	3.03	1.59	4	60.0	26.9	High
	<i>Rabi</i> 19-20	Ch1	76.28	67.60	54.68	8.00	2.40	6.15	2.15	5.90	2.05	2.88	9.40	3.00	1.59	4	57.5	26.7	High
	<i>Kharif</i> 20	Ch1	73.55	63.38	53.43	8.00	2.40	5.80	2.20	5.00	1.80	2.79	9.20	2.80	1.84	4	57.5	25.8	High
Vishnubhog Selection-1	<i>Kharif</i> 19	Ch2	74.47	67.14	52.40	6.40	2.30	4.96	2.18	4.75	2.11	2.27	7.43	3.23	1.56	5	63.5	25.5	Absent
	<i>Rabi</i> 19-20	Ch2	74.47	65.14	53.90	6.40	2.30	4.90	2.15	4.65	2.05	2.27	7.40	3.20	1.59	5	65.0	25.3	Absent
	<i>Kharif</i> 20	Ch2	76.21	69.08	58.45	6.40	2.40	5.45	2.00	4.60	1.85	2.49	6.60	3.50	1.44	5	40.5	26.3	Absent
Rajeshwari	<i>Kharif</i> 19	Ch3	74.03	66.54	52.80	8.67	3.20	6.80	2.60	6.48	2.41	2.67	10.4	3.23	1.60	4	42.5	25.9	Absent
	<i>Rabi</i> 19-20	Ch3	74.03	66.54	52.80	8.67	3.20	6.80	2.60	6.48	2.41	2.67	10.3	3.22	1.60	4	42.5	25.9	Absent
	<i>Kharif</i> 20	Ch3	74.02	66.53	52.8	8.66	3.2	6.8	2.6	6.47	2.40	2.66	10.4	3.24	1.62	4	42.5	25.9	Absent

**Supplementary Table S4.** Shapiro-Wilk W test of the agro-morphological and grain quality traits during three consecutive seasons.

Traits	N	M4		M5		M6	
		Kharif season 2019		Rabi season 2019-20		Kharif season 2020	
		Shapiro-Wilk W	p(normal)	Shapiro-Wilk W	p(normal)	Shapiro-Wilk W	p(normal)
DFF	24	0.925	<b>0.077</b>	0.956	<b>0.357</b>	0.951	<b>0.289</b>
PH	24	0.836	0.001	0.948	<b>0.243</b>	0.848	0.002
PL	24	0.947	<b>0.227</b>	0.944	<b>0.199</b>	0.960	<b>0.429</b>
FLL	24	0.963	<b>0.496</b>	0.906	<b>0.294</b>	0.958	<b>0.400</b>
FLW	24	0.896	0.018	0.764	0.000	0.787	0.000
TTP	24	0.462	0.000	0.482	0.000	0.560	0.000
ETP	24	0.551	0.000	0.807	0.000	0.667	0.000
FSP	24	0.932	<b>0.108</b>	0.977	<b>0.841</b>	0.943	<b>0.186</b>
SSP	24	0.955	<b>0.347</b>	0.950	<b>0.270</b>	0.958	<b>0.401</b>
TSP	24	0.912	<b>0.394</b>	0.980	<b>0.900</b>	0.962	<b>0.477</b>
SF%	24	0.888	0.012	0.914	0.042	0.878	0.008
HSW	24	0.870	0.005	0.815	0.001	0.910	0.035
GYP	24	0.947	<b>0.231</b>	0.925	<b>0.076</b>	0.972	<b>0.720</b>
Hul%	24	0.970	<b>0.669</b>	0.965	<b>0.538</b>	0.937	<b>0.139</b>
Mil%	24	0.969	<b>0.652</b>	0.969	<b>0.635</b>	0.957	<b>0.374</b>
PadL	24	0.888	0.012	0.895	0.017	0.897	0.019
PadB	24	0.944	<b>0.202</b>	0.936	<b>0.134</b>	0.864	0.004
BRL	24	0.878	0.008	0.888	0.012	0.904	0.026
BRB	24	0.950	<b>0.273</b>	0.959	<b>0.424</b>	0.793	0.000
KL	24	0.921	<b>0.063</b>	0.865	0.004	0.836	0.001
KB	24	0.971	<b>0.692</b>	0.963	<b>0.493</b>	0.841	0.002
KLBR	24	0.920	<b>0.057</b>	0.919	<b>0.056</b>	0.897	0.018
CRL	24	0.953	<b>0.312</b>	0.954	<b>0.322</b>	0.914	0.043
CRW	24	0.896	0.018	0.896	0.018	0.919	0.055
ER	24	0.873	0.006	0.874	0.006	0.930	<b>0.096</b>
ASV	24	0.941	<b>0.171</b>	0.941	<b>0.171</b>	0.942	<b>0.177</b>
GC	24	0.928	<b>0.086</b>	0.908	0.032	0.836	0.001
AC%	24	0.867	0.005	0.905	0.028	0.969	<b>0.653</b>
HRR%	24	0.955	<b>0.346</b>	0.956	<b>0.359</b>	0.976	<b>0.819</b>

**Supplementary Table S5.** Correlation coefficients for agro-morphological traits during all three seasons

Characters	Seasons	DFF	PH	PL	FLL	FLW	TTP	ETP	FSP	SSP	TSP	SF%	HSW	GYP
Days to 50% Flowering (DFF)	Kharif 2019	-	0.633**	0.047 <sup>NS</sup>	-0.180 <sup>NS</sup>	-0.300*	0.123 <sup>NS</sup>	0.077 <sup>NS</sup>	-0.318*	0.103 <sup>NS</sup>	-0.305*	-0.243 <sup>NS</sup>	-0.561**	-0.220 <sup>NS</sup>
	Rabi 2019-20	-	0.678**	0.224 <sup>NS</sup>	-0.016 <sup>NS</sup>	-0.200 <sup>NS</sup>	-0.035 <sup>NS</sup>	-0.165 <sup>NS</sup>	0.074 <sup>NS</sup>	0.187 <sup>NS</sup>	-0.256 <sup>NS</sup>	-0.204 <sup>NS</sup>	-0.463**	-0.266 <sup>NS</sup>
	Kharif 2020	-	0.605**	0.316*	-0.051 <sup>NS</sup>	-0.364*	0.216 <sup>NS</sup>	0.157 <sup>NS</sup>	0.040 <sup>NS</sup>	0.606**	0.218 <sup>NS</sup>	-0.428**	-0.556**	-0.138 <sup>NS</sup>
Plant height (cm) (PH)	Kharif 2019	0.645**	-	0.364*	0.111 <sup>NS</sup>	-0.231 <sup>NS</sup>	-0.068 <sup>NS</sup>	-0.085 <sup>NS</sup>	-0.164 <sup>NS</sup>	-0.168 <sup>NS</sup>	-0.215 <sup>NS</sup>	0.033 <sup>NS</sup>	-0.068 <sup>NS</sup>	-0.011*
	Rabi 2019-20	0.714**	-	0.477**	0.316*	-0.010 <sup>NS</sup>	-0.192 <sup>NS</sup>	-0.284 <sup>NS</sup>	0.342*	-0.080 <sup>NS</sup>	-0.096 <sup>NS</sup>	0.188 <sup>NS</sup>	-0.017 <sup>NS</sup>	-0.136*
	Kharif 2020	0.624**	-	0.380**	0.314*	-0.123 <sup>NS</sup>	-0.124 <sup>NS</sup>	-0.143 <sup>NS</sup>	0.175 <sup>NS</sup>	0.303*	0.251 <sup>NS</sup>	-0.047 <sup>NS</sup>	-0.029 <sup>NS</sup>	-0.036*
Panicle length (cm) (PL)	Kharif 2019	0.041 <sup>NS</sup>	0.380**	-	-0.163 <sup>NS</sup>	-0.009 <sup>NS</sup>	-0.128 <sup>NS</sup>	-0.121 <sup>NS</sup>	0.357*	-0.376**	0.273 <sup>NS</sup>	0.465**	0.072 <sup>NS</sup>	0.630*
	Rabi 2019-20	0.227 <sup>NS</sup>	0.496**	-	-0.145 <sup>NS</sup>	-0.224 <sup>NS</sup>	-0.023 <sup>NS</sup>	-0.011 <sup>NS</sup>	0.535**	-0.144 <sup>NS</sup>	0.159 <sup>NS</sup>	0.372**	-0.210 <sup>NS</sup>	0.418*
	Kharif 2020	0.347*	0.419**	-	-0.272 <sup>NS</sup>	-0.264 <sup>NS</sup>	0.068 <sup>NS</sup>	-0.001 <sup>NS</sup>	0.393**	0.143 <sup>NS</sup>	0.404**	0.166 <sup>NS</sup>	-0.233 <sup>NS</sup>	0.625**
Flag leaf length(FLL) (cm)	Kharif 2019	-0.204 <sup>NS</sup>	0.120 <sup>NS</sup>	-0.160 <sup>NS</sup>	-	0.218 <sup>NS</sup>	-0.228 <sup>NS</sup>	-0.210 <sup>NS</sup>	0.114 <sup>NS</sup>	0.011 <sup>NS</sup>	0.122 <sup>NS</sup>	0.125 <sup>NS</sup>	0.360*	0.085 <sup>NS</sup>
	Rabi 2019-20	-0.052 <sup>NS</sup>	0.327*	-0.160 <sup>NS</sup>	-	0.394**	-0.183 <sup>NS</sup>	-0.028 <sup>NS</sup>	0.140 <sup>NS</sup>	-0.025 <sup>NS</sup>	0.138 <sup>NS</sup>	0.154 <sup>NS</sup>	0.283 <sup>NS</sup>	0.164 <sup>NS</sup>
	Kharif 2020	-0.062 <sup>NS</sup>	0.333*	-0.280 <sup>NS</sup>	-	0.195 <sup>NS</sup>	-0.184 <sup>NS</sup>	-0.245 <sup>NS</sup>	-0.070 <sup>NS</sup>	-0.065 <sup>NS</sup>	-0.084 <sup>NS</sup>	0.043 <sup>NS</sup>	0.274 <sup>NS</sup>	0.172 <sup>NS</sup>
Flag leaf width(FLW) (cm)	Kharif 2019	-0.301*	-0.241 <sup>NS</sup>	-0.003 <sup>NS</sup>	0.237 <sup>NS</sup>	-	-0.698**	-0.670**	0.516**	-0.121 <sup>NS</sup>	0.506**	0.441**	0.177 <sup>NS</sup>	0.299*
	Rabi 2019-20	-0.216 <sup>NS</sup>	-0.011 <sup>NS</sup>	-0.229 <sup>NS</sup>	0.405**	-	-0.852**	-0.486**	0.370**	0.077 <sup>NS</sup>	0.583**	0.494**	0.383**	0.455**
	Kharif 2020	-0.388**	-0.139 <sup>NS</sup>	-0.280 <sup>NS</sup>	0.241 <sup>NS</sup>	-	-0.821**	-0.790**	0.366*	0.110 <sup>NS</sup>	0.369**	0.282 <sup>NS</sup>	0.260 <sup>NS</sup>	0.140 <sup>NS</sup>
Total tillers/ plant (TTP)	Kharif 2019	0.116 <sup>NS</sup>	-0.070 <sup>NS</sup>	-0.134 <sup>NS</sup>	-0.254 <sup>NS</sup>	-0.714**	-	0.986**	-0.502**	0.070 <sup>NS</sup>	-0.505**	-0.463**	-0.221 <sup>NS</sup>	0.278 <sup>NS</sup>
	Rabi 2019-20	-0.044 <sup>NS</sup>	-0.199 <sup>NS</sup>	-0.014 <sup>NS</sup>	-0.193 <sup>NS</sup>	-0.878**	-	0.640**	-0.429**	-0.027 <sup>NS</sup>	-0.463**	-0.473**	-0.314*	0.414**
	Kharif 2020	0.232 <sup>NS</sup>	-0.131 <sup>NS</sup>	0.065 <sup>NS</sup>	-0.186 <sup>NS</sup>	-0.922**	-	0.955**	-0.516**	-0.229 <sup>NS</sup>	-0.542**	-0.298*	-0.223 <sup>NS</sup>	0.221 <sup>NS</sup>
Effective tillers/plant (ETP)	Kharif 2019	0.073 <sup>NS</sup>	-0.087 <sup>NS</sup>	-0.131 <sup>NS</sup>	-0.234 <sup>NS</sup>	-0.691**	0.999**	-	-0.448**	0.065 <sup>NS</sup>	-0.449**	-0.421**	-0.194 <sup>NS</sup>	0.243 <sup>NS</sup>
	Rabi 2019-20	-0.149 <sup>NS</sup>	-0.398**	-0.052 <sup>NS</sup>	0.000 <sup>NS</sup>	-0.677**	0.918**	-	-0.235 <sup>NS</sup>	0.148 <sup>NS</sup>	-0.323*	-0.442**	-0.294*	0.287*
	Kharif 2020	0.175 <sup>NS</sup>	-0.156 <sup>NS</sup>	-0.018 <sup>NS</sup>	-0.268 <sup>NS</sup>	-0.900**	0.990**	-	-0.498**	-0.285*	-0.542**	-0.228 <sup>NS</sup>	-0.184 <sup>NS</sup>	0.227 <sup>NS</sup>
Fertile spikelets/ panicle(FSP)	Kharif 2019	-0.335*	-0.166 <sup>NS</sup>	0.375**	0.133 <sup>NS</sup>	0.549**	-0.533**	-0.474**	-	-0.283 <sup>NS</sup>	0.968**	0.858**	0.117 <sup>NS</sup>	0.730**
	Rabi 2019-20	-0.269 <sup>NS</sup>	0.156 <sup>NS</sup>	0.444**	0.187 <sup>NS</sup>	0.497**	-0.421**	-0.339*	-	0.817**	-0.473**	0.791**	0.971**	0.308*
	Kharif 2020	-0.151 <sup>NS</sup>	0.046 <sup>NS</sup>	0.631**	-0.193 <sup>NS</sup>	0.198 <sup>NS</sup>	-0.253 <sup>NS</sup>	-0.272 <sup>NS</sup>	-	0.767**	-0.235 <sup>NS</sup>	0.644**	0.761**	0.166**
Sterile spikelets/ panicle(SSP)	Kharif 2019	0.132 <sup>NS</sup>	-0.191 <sup>NS</sup>	-0.472**	0.056 <sup>NS</sup>	-0.083 <sup>NS</sup>	0.068 <sup>NS</sup>	0.105 <sup>NS</sup>	-0.397**	-	-0.034 <sup>NS</sup>	-0.696**	-0.400**	-0.598**
	Rabi 2019-20	0.483**	-0.181 <sup>NS</sup>	-0.294*	-0.076 <sup>NS</sup>	0.153 <sup>NS</sup>	-0.017 <sup>NS</sup>	-0.390**	-0.179 <sup>NS</sup>	-	-0.053 <sup>NS</sup>	-0.265 <sup>NS</sup>	-0.374**	-0.309**
	Kharif 2020	0.665**	0.326*	0.163 <sup>NS</sup>	-0.045 <sup>NS</sup>	0.098 <sup>NS</sup>	-0.241 <sup>NS</sup>	-0.317*	0.114 <sup>NS</sup>	-	0.413**	-0.644**	-0.507**	-0.211**
Total spikelets/ panicle(TSP)	Kharif 2019	-0.328*	-0.222 <sup>NS</sup>	0.292*	0.155 <sup>NS</sup>	0.567**	-0.554**	-0.483**	0.977**	-0.192 <sup>NS</sup>	-	0.712**	0.017 <sup>NS</sup>	0.605**
	Rabi 2019-20	-0.271 <sup>NS</sup>	-0.100 <sup>NS</sup>	0.193 <sup>NS</sup>	0.139 <sup>NS</sup>	0.611**	-0.520**	-0.448**	0.660**	-0.014 <sup>NS</sup>	-	0.712**	-0.015 <sup>NS</sup>	0.718**
	Kharif 2020	0.227 <sup>NS</sup>	0.259 <sup>NS</sup>	0.454**	-0.065 <sup>NS</sup>	0.394**	-0.562**	-0.580**	0.959**	0.390**	-	0.403**	-0.201 <sup>NS</sup>	0.598**
Spikelet fertility (SF%)	Kharif 2019	-0.263 <sup>NS</sup>	0.032 <sup>NS</sup>	0.504**	0.113 <sup>NS</sup>	0.445**	-0.489**	-0.461**	0.903**	-0.710**	0.801**	-	0.300*	0.837**
	Rabi 2019-20	-0.241 <sup>NS</sup>	0.195 <sup>NS</sup>	0.408**	0.183 <sup>NS</sup>	0.519**	-0.503**	-0.584**	0.753**	-0.488**	0.801**	-	0.290*	0.897**
	Kharif 2020	-0.457**	-0.047 <sup>NS</sup>	0.202 <sup>NS</sup>	0.039 <sup>NS</sup>	0.334*	-0.320*	-0.251 <sup>NS</sup>	0.680**	-0.619**	0.454**	-	0.356*	0.693**
Hundred Seed weight (g) (HSW)	Kharif 2019	-0.575**	-0.072 <sup>NS</sup>	0.071 <sup>NS</sup>	0.415**	0.183 <sup>NS</sup>	-0.222 <sup>NS</sup>	-0.199 <sup>NS</sup>	0.120 <sup>NS</sup>	-0.449**	0.024 <sup>NS</sup>	0.302*	-	0.232*
	Rabi 2019-20	-0.496**	-0.015 <sup>NS</sup>	-0.221 <sup>NS</sup>	0.291*	0.384**	-0.320*	-0.392**	-0.028 <sup>NS</sup>	-0.647**	-0.019 <sup>NS</sup>	0.319*	-	0.288*
	Kharif 2020	-0.617**	-0.038 <sup>NS</sup>	-0.232 <sup>NS</sup>	0.290*	0.296*	-0.236 <sup>NS</sup>	-0.198 <sup>NS</sup>	-0.050 <sup>NS</sup>	-0.593**	-0.215 <sup>NS</sup>	0.406**	-	0.124*
Grain yield/plant (GYP) (g)	Kharif 2019	-0.228 <sup>NS</sup>	-0.019*	0.696**	0.118 <sup>NS</sup>	0.326*	0.297*	0.257 <sup>NS</sup>	0.788**	-0.770**	0.663**	0.934**	0.268*	-
	Rabi 2019-20	-0.269 <sup>NS</sup>	-0.156*	0.444**	0.187 <sup>NS</sup>	0.497**	0.421**	0.339*	0.817**	-0.473**	0.791**	0.971**	0.308*	-
	Kharif 2020	-0.151 <sup>NS</sup>	-0.046*	0.631**	0.193 <sup>NS</sup>	0.198 <sup>NS</sup>	0.253*	0.272 <sup>NS</sup>	0.767**	-0.235*	0.644**	0.761**	0.166*	-

**NB:** Values below diagonal represents the genotypic correlation coefficients whereas above diagonal represents phenotypic correlation coefficients



**Supplementary Table S6.** Correlation coefficients for grain quality traits during all three seasons

Traits	Seasons	Hul (%)	Mil (%)	PadL	PadB	BRL	BRB	KL	KB	KLBR	CRL	CRW	ER	GC	AC (%)	HRR (%)
Hul (%)	Kharif 2019	-	0.696**	0.315*	-0.419**	0.291*	-0.182 <sup>NS</sup>	0.137 <sup>NS</sup>	-0.138 <sup>NS</sup>	0.206 <sup>NS</sup>	0.098 <sup>NS</sup>	-0.292*	0.296*	-0.273 <sup>NS</sup>	0.088 <sup>NS</sup>	0.291*
	Rabi 2019-20	-	0.771**	0.339*	-0.421**	0.300*	-0.249 <sup>NS</sup>	0.230 <sup>NS</sup>	-0.191 <sup>NS</sup>	0.276 <sup>NS</sup>	0.097 <sup>NS</sup>	-0.391**	0.312*	-0.279 <sup>NS</sup>	0.070 <sup>NS</sup>	0.470**
	Kharif 2020	-	0.657**	-0.041 <sup>NS</sup>	0.061 <sup>NS</sup>	-0.050 <sup>NS</sup>	0.069 <sup>NS</sup>	-0.098 <sup>NS</sup>	0.052 <sup>NS</sup>	-0.099 <sup>NS</sup>	-0.198 <sup>NS</sup>	-0.197 <sup>NS</sup>	-0.104 <sup>NS</sup>	-0.209 <sup>NS</sup>	0.283 <sup>NS</sup>	0.705**
Mil (%)	Kharif 2019	0.822**	-	0.420**	-0.256 <sup>NS</sup>	0.325*	-0.120 <sup>NS</sup>	0.254 <sup>NS</sup>	-0.142 <sup>NS</sup>	0.286*	0.111 <sup>NS</sup>	-0.388**	0.349*	-0.199 <sup>NS</sup>	0.227 <sup>NS</sup>	0.497**
	Rabi 2019-20	0.833**	-	0.433**	-0.307*	0.290*	-0.194 <sup>NS</sup>	0.238 <sup>NS</sup>	-0.169 <sup>NS</sup>	0.283 <sup>NS</sup>	0.154 <sup>NS</sup>	-0.390**	0.348*	-0.306*	0.067 <sup>NS</sup>	0.507**
	Kharif 2020	0.664**	-	0.030 <sup>NS</sup>	0.119 <sup>NS</sup>	0.066 <sup>NS</sup>	0.042 <sup>NS</sup>	-0.054 <sup>NS</sup>	0.007 <sup>NS</sup>	-0.047 <sup>NS</sup>	-0.087 <sup>NS</sup>	-0.164 <sup>NS</sup>	0.007 <sup>NS</sup>	-0.258 <sup>NS</sup>	0.273 <sup>NS</sup>	0.722**
PadL	Kharif 2019	0.346*	0.536**	-	-0.226 <sup>NS</sup>	0.922**	-0.247 <sup>NS</sup>	0.823**	-0.205 <sup>NS</sup>	0.855**	0.686**	-0.497**	0.810**	-0.241 <sup>NS</sup>	0.177 <sup>NS</sup>	-0.097 <sup>NS</sup>
	Rabi 2019-20	0.480**	0.547**	-	-0.232 <sup>NS</sup>	0.912**	-0.219 <sup>NS</sup>	0.895**	-0.249 <sup>NS</sup>	0.838**	0.681**	-0.491**	0.813**	-0.252 <sup>NS</sup>	0.137 <sup>NS</sup>	-0.175 <sup>NS</sup>
	Kharif 2020	-0.106 <sup>NS</sup>	0.019 <sup>NS</sup>	-	-0.253 <sup>NS</sup>	0.924**	-0.020 <sup>NS</sup>	0.766**	-0.146 <sup>NS</sup>	0.726**	0.733**	0.096 <sup>NS</sup>	0.728**	-0.108 <sup>NS</sup>	-0.013 <sup>NS</sup>	-0.172 <sup>NS</sup>
PadB	Kharif 2019	-0.482**	-0.329*	-0.223 <sup>NS</sup>	-	-0.289*	0.593**	-0.215 <sup>NS</sup>	0.586**	-0.410**	0.116 <sup>NS</sup>	0.529**	-0.190 <sup>NS</sup>	0.333*	-0.141 <sup>NS</sup>	-0.219 <sup>NS</sup>
	Rabi 2019-20	-0.530**	-0.361*	-0.234 <sup>NS</sup>	-	-0.282 <sup>NS</sup>	0.613**	-0.225 <sup>NS</sup>	0.589**	-0.445**	0.118 <sup>NS</sup>	0.528**	-0.190 <sup>NS</sup>	0.261 <sup>NS</sup>	-0.078 <sup>NS</sup>	-0.271 <sup>NS</sup>
	Kharif 2020	0.016 <sup>NS</sup>	0.120 <sup>NS</sup>	-0.262 <sup>NS</sup>	-	-0.295*	0.600**	-0.235 <sup>NS</sup>	0.651**	-0.512**	0.053 <sup>NS</sup>	0.410**	-0.142 <sup>NS</sup>	0.253 <sup>NS</sup>	-0.093 <sup>NS</sup>	-0.028 <sup>NS</sup>
BRL	Kharif 2019	0.332*	0.401**	0.940**	-0.294*	-	-0.256 <sup>NS</sup>	0.895**	-0.235 <sup>NS</sup>	0.913**	0.722**	-0.463**	0.808**	-0.192 <sup>NS</sup>	0.190 <sup>NS</sup>	-0.212 <sup>NS</sup>
	Rabi 2019-20	0.375**	0.342*	0.937**	-0.288*	-	-0.222 <sup>NS</sup>	0.968**	-0.272 <sup>NS</sup>	0.896**	0.707**	-0.445**	0.794**	-0.211 <sup>NS</sup>	0.129 <sup>NS</sup>	-0.225 <sup>NS</sup>
	Kharif 2020	-0.106 <sup>NS</sup>	0.082 <sup>NS</sup>	0.932**	-0.317*	-	0.007 <sup>NS</sup>	0.872**	-0.114 <sup>NS</sup>	0.809**	0.786**	0.142 <sup>NS</sup>	0.756**	-0.219 <sup>NS</sup>	0.049 <sup>NS</sup>	-0.177 <sup>NS</sup>
BRB	Kharif 2019	-0.212 <sup>NS</sup>	-0.131 <sup>NS</sup>	-0.262 <sup>NS</sup>	0.640**	-0.271 <sup>NS</sup>	-	-0.223 <sup>NS</sup>	0.908**	-0.512**	0.074 <sup>NS</sup>	0.584**	-0.251 <sup>NS</sup>	0.067 <sup>NS</sup>	0.241 <sup>NS</sup>	-0.086 <sup>NS</sup>
	Rabi 2019-20	-0.424**	-0.251 <sup>NS</sup>	-0.229 <sup>NS</sup>	0.679**	-0.240 <sup>NS</sup>	-	-0.158 <sup>NS</sup>	0.946**	-0.549**	0.113 <sup>NS</sup>	0.596**	-0.269 <sup>NS</sup>	0.023 <sup>NS</sup>	0.203 <sup>NS</sup>	-0.206 <sup>NS</sup>
	Kharif 2020	0.064 <sup>NS</sup>	0.024 <sup>NS</sup>	-0.029 <sup>NS</sup>	0.714**	-0.009 <sup>NS</sup>	-	0.099 <sup>NS</sup>	0.905**	-0.327*	0.261 <sup>NS</sup>	0.308*	0.124 <sup>NS</sup>	-0.138 <sup>NS</sup>	0.193 <sup>NS</sup>	-0.048 <sup>NS</sup>
KL	Kharif 2019	0.120 <sup>NS</sup>	0.261 <sup>NS</sup>	0.885**	-0.262 <sup>NS</sup>	0.968**	-0.248 <sup>NS</sup>	-	-0.216 <sup>NS</sup>	0.861**	0.664**	-0.411**	0.742**	-0.105 <sup>NS</sup>	0.196 <sup>NS</sup>	-0.245 <sup>NS</sup>
	Rabi 2019-20	0.272 <sup>NS</sup>	0.294*	0.924**	-0.233 <sup>NS</sup>	0.976**	-0.176 <sup>NS</sup>	-	-0.206 <sup>NS</sup>	0.890**	0.691**	-0.435**	0.778**	-0.138 <sup>NS</sup>	0.187 <sup>NS</sup>	-0.242 <sup>NS</sup>
	Kharif 2020	-0.143 <sup>NS</sup>	-0.087 <sup>NS</sup>	0.777**	-0.262 <sup>NS</sup>	0.878**	0.097 <sup>NS</sup>	-	-0.013 <sup>NS</sup>	0.878**	0.756**	0.204 <sup>NS</sup>	0.690**	-0.244 <sup>NS</sup>	0.136 <sup>NS</sup>	-0.219 <sup>NS</sup>
KB	Kharif 2019	-0.173 <sup>NS</sup>	-0.136 <sup>NS</sup>	-0.239 <sup>NS</sup>	0.662**	-0.247 <sup>NS</sup>	0.987**	-0.242 <sup>NS</sup>	-	-0.544**	0.111 <sup>NS</sup>	0.616**	-0.238 <sup>NS</sup>	0.104 <sup>NS</sup>	0.176 <sup>NS</sup>	-0.143 <sup>NS</sup>
	Rabi 2019-20	-0.373**	-0.220 <sup>NS</sup>	-0.259 <sup>NS</sup>	0.653**	-0.300*	0.974**	-0.233 <sup>NS</sup>	-	-0.616**	0.085 <sup>NS</sup>	0.643**	-0.310*	0.024 <sup>NS</sup>	0.189 <sup>NS</sup>	-0.129 <sup>NS</sup>
	Kharif 2020	0.266 <sup>NS</sup>	0.106 <sup>NS</sup>	-0.180 <sup>NS</sup>	0.866**	-0.141 <sup>NS</sup>	0.977**	-0.024 <sup>NS</sup>	-	-0.473**	0.151 <sup>NS</sup>	0.346*	-0.003 <sup>NS</sup>	-0.093 <sup>NS</sup>	0.204 <sup>NS</sup>	-0.046 <sup>NS</sup>
KLBR	Kharif 2019	0.240 <sup>NS</sup>	0.372**	0.893**	-0.428**	0.935**	-0.537**	0.941**	-0.541**	-	0.542**	-0.616**	0.754**	-0.140 <sup>NS</sup>	0.090 <sup>NS</sup>	-0.135 <sup>NS</sup>
	Rabi 2019-20	0.382**	0.347*	0.871**	-0.466**	0.917**	-0.554**	0.906**	-0.612**	-	0.501**	-0.646**	0.764**	-0.125 <sup>NS</sup>	0.057 <sup>NS</sup>	-0.122 <sup>NS</sup>
	Kharif 2020	-0.225 <sup>NS</sup>	-0.122 <sup>NS</sup>	0.770**	-0.620**	0.848**	-0.318*	0.909**	-0.429**	-	0.564**	-0.010 <sup>NS</sup>	0.584**	-0.171 <sup>NS</sup>	0.028 <sup>NS</sup>	-0.146 <sup>NS</sup>
CRL	Kharif 2019	0.111 <sup>NS</sup>	0.151 <sup>NS</sup>	0.704**	0.120 <sup>NS</sup>	0.735**	0.077 <sup>NS</sup>	0.730**	0.109 <sup>NS</sup>	0.575**	-	-0.080 <sup>NS</sup>	0.820**	-0.175 <sup>NS</sup>	0.166 <sup>NS</sup>	-0.408**
	Rabi 2019-20	0.139 <sup>NS</sup>	0.196 <sup>NS</sup>	0.702**	0.122 <sup>NS</sup>	0.719**	0.113 <sup>NS</sup>	0.701**	0.076 <sup>NS</sup>	0.522**	-	-0.083 <sup>NS</sup>	0.819**	-0.194 <sup>NS</sup>	0.204 <sup>NS</sup>	-0.311*

	Kharif 2020	-0.293*	-0.105 <sup>NS</sup>	0.743**	0.073 <sup>NS</sup>	0.798**	0.290*	0.774**	0.166 <sup>NS</sup>	0.603**	-	0.361*	0.867**	0.032 <sup>NS</sup>	-0.001 <sup>NS</sup>	-0.368*
<b>CRW</b>	Kharif 2019	-0.355*	-0.455**	-0.551**	0.573**	-0.494**	0.639**	-0.459**	0.743**	-0.686**	-0.108 <sup>NS</sup>	-	-0.598**	0.118 <sup>NS</sup>	-0.106 <sup>NS</sup>	-0.270 <sup>NS</sup>
	Rabi 2019-20	-0.497**	-0.488**	-0.545**	0.576**	-0.477**	0.674**	-0.476**	0.745**	-0.713**	-0.110 <sup>NS</sup>	-	-0.627**	0.087 <sup>NS</sup>	-0.037 <sup>NS</sup>	-0.299*
	Kharif 2020	0.010 <sup>NS</sup>	0.003 <sup>NS</sup>	0.120 <sup>NS</sup>	0.571**	0.177 <sup>NS</sup>	0.398**	0.228 <sup>NS</sup>	0.411**	0.005 <sup>NS</sup>	0.434**	-	-0.131 <sup>NS</sup>	0.089 <sup>NS</sup>	-0.041 <sup>NS</sup>	-0.189 <sup>NS</sup>
<b>ER</b>	Kharif 2019	0.307*	0.426**	0.858**	-0.201 <sup>NS</sup>	0.853**	-0.267 <sup>NS</sup>	0.821**	-0.275 <sup>NS</sup>	0.802**	0.847**	-0.621**	-	-0.165 <sup>NS</sup>	0.166 <sup>NS</sup>	-0.159 <sup>NS</sup>
	Rabi 2019-20	0.368*	0.405**	0.851**	-0.194 <sup>NS</sup>	0.810**	-0.289*	0.795**	-0.350*	0.795**	0.837**	-0.626**	-	-0.180 <sup>NS</sup>	0.171 <sup>NS</sup>	-0.074 <sup>NS</sup>
	Kharif 2020	-0.314*	-0.082 <sup>NS</sup>	0.768**	-0.156 <sup>NS</sup>	0.801**	0.161 <sup>NS</sup>	0.753**	0.006 <sup>NS</sup>	0.659**	0.901**	-0.008 <sup>NS</sup>	-	-0.039 <sup>NS</sup>	0.060 <sup>NS</sup>	-0.277 <sup>NS</sup>
<b>GC</b>	Kharif 2019	-0.342*	-0.352*	-0.267 <sup>NS</sup>	0.355*	-0.211 <sup>NS</sup>	0.072 <sup>NS</sup>	-0.223 <sup>NS</sup>	0.137 <sup>NS</sup>	-0.150 <sup>NS</sup>	-0.175 <sup>NS</sup>	0.211 <sup>NS</sup>	-0.186 <sup>NS</sup>	-	-0.513**	-0.129 <sup>NS</sup>
	Rabi 2019-20	-0.362*	-0.337*	-0.285*	0.296*	-0.230 <sup>NS</sup>	0.086 <sup>NS</sup>	-0.152 <sup>NS</sup>	0.103 <sup>NS</sup>	-0.160 <sup>NS</sup>	-0.206 <sup>NS</sup>	0.227 <sup>NS</sup>	-0.251 <sup>NS</sup>	-	-0.609**	-0.087 <sup>NS</sup>
	Kharif 2020	-0.359*	-0.397**	-0.114 <sup>NS</sup>	0.261 <sup>NS</sup>	-0.232 <sup>NS</sup>	-0.166 <sup>NS</sup>	-0.261 <sup>NS</sup>	-0.132 <sup>NS</sup>	-0.181 <sup>NS</sup>	0.028 <sup>NS</sup>	0.148 <sup>NS</sup>	-0.062 <sup>NS</sup>	-	-0.637**	-0.426**
<b>AC (%)</b>	Kharif 2019	0.157 <sup>NS</sup>	0.380**	0.193 <sup>NS</sup>	-0.159 <sup>NS</sup>	0.212 <sup>NS</sup>	0.246 <sup>NS</sup>	0.200 <sup>NS</sup>	0.144 <sup>NS</sup>	0.130 <sup>NS</sup>	0.171 <sup>NS</sup>	-0.133 <sup>NS</sup>	0.192 <sup>NS</sup>	-0.642**	-	0.014 <sup>NS</sup>
	Rabi 2019-20	0.089 <sup>NS</sup>	0.161 <sup>NS</sup>	0.170 <sup>NS</sup>	-0.090 <sup>NS</sup>	0.164 <sup>NS</sup>	0.208 <sup>NS</sup>	0.207 <sup>NS</sup>	0.181 <sup>NS</sup>	0.081 <sup>NS</sup>	0.214 <sup>NS</sup>	-0.134 <sup>NS</sup>	0.220 <sup>NS</sup>	-0.710**	-	0.014 <sup>NS</sup>
	Kharif 2020	0.528**	0.319*	-0.010 <sup>NS</sup>	-0.080 <sup>NS</sup>	0.066 <sup>NS</sup>	0.317*	0.178 <sup>NS</sup>	0.297*	0.041 <sup>NS</sup>	-0.027 <sup>NS</sup>	-0.081 <sup>NS</sup>	0.039 <sup>NS</sup>	-0.860**	-	0.357*
<b>HRR (%)</b>	Kharif 2019	0.353*	0.593**	-0.105 <sup>NS</sup>	-0.220 <sup>NS</sup>	-0.236 <sup>NS</sup>	-0.098 <sup>NS</sup>	-0.285*	-0.139 <sup>NS</sup>	-0.140 <sup>NS</sup>	-0.471**	-0.321*	-0.200 <sup>NS</sup>	-0.163 <sup>NS</sup>	0.038 <sup>NS</sup>	-
	Rabi 2019-20	0.778**	0.908**	-0.168 <sup>NS</sup>	-0.440**	-0.378**	-0.357*	-0.428**	-0.273 <sup>NS</sup>	-0.224 <sup>NS</sup>	-0.549**	-0.404**	-0.227 <sup>NS</sup>	-0.136 <sup>NS</sup>	-0.273 <sup>NS</sup>	-
	Kharif 2020	0.871**	0.644**	-0.261 <sup>NS</sup>	-0.119 <sup>NS</sup>	-0.246 <sup>NS</sup>	-0.078 <sup>NS</sup>	-0.292*	0.016 <sup>NS</sup>	-0.246 <sup>NS</sup>	-0.503**	-0.148 <sup>NS</sup>	-0.493**	-0.599**	0.453**	-

**NB:** Values below diagonal represents the genotypic correlation coefficients whereas above diagonal represents phenotypic correlation coefficients

**Supplementary Table S7.** Details of the three rice landraces used in the current study

S. No.	Accession No.	Name of rice landraces	Special feature(s)	Undesirable trait(s)	Origin
1	IC-125004	Vishnubhog	Aromatic short bold grains	Tall and late maturity, poor yield potential	Sarguja
2	IC-386390	Samundchini	Aromatic short slender grains	Tall and late maturity, poor yield potential	Bilaspur
3	IC-377273	Jhilli	Super fine grains/ long slender	Tall and late maturity, poor yield potential	Mahasamund