

Supplementary Table S1. Plant height (PH), tiller number (TN), leaf number (LN), and leaf area (LA), measured in low temperature (LT), optimum temperature (OT), and high temperature (HT) stress conditions in 64 rice genotypes. BL – breeding genotypes; RL – released genotypes. *, **, *** represent Significance levels at $p \leq 0.05$, $p \leq 0.01$, and $p \leq 0.001$. NS represents non-significant.

Cultivar Name	Classification	Type	Plant Height, (cm plant ⁻¹)			Tiller Number, (no. plant ⁻¹)			Leaf Number, (no. plant ⁻¹)			Leaf Area, (cm ² plant ⁻¹)		
			LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT
12DS-GMET-15	<i>Indica</i>	BL	2.67	14.17	16.17	1.67	4.00	3.67	3.00	3.67	4.00	12.52	194.06	238.88
12DS-GMET-25	<i>Indica</i>	BL	3.33	11.17	13.50	1.33	4.00	5.00	3.33	3.00	4.33	14.83	167.25	277.33
Apo	<i>Indica</i>	RL	2.67	11.17	13.17	1.67	3.67	3.67	3.00	3.00	3.00	11.28	131.22	196.80
COLOMBIA XXI	<i>Indica</i>	RL	2.67	10.83	13.33	1.00	3.67	4.00	3.00	3.00	4.00	9.94	126.40	216.41
CT18233-15-6-6-4-8-1	<i>Indica</i>	BL	2.67	13.83	14.83	1.33	3.67	3.67	3.00	2.67	4.00	12.82	155.05	215.27
CT18237-13-11-3-3-5-1	<i>Indica</i>	BL	2.67	11.50	13.33	1.33	3.33	4.67	3.00	3.33	3.67	10.12	150.14	273.41
CT18244-9-4-4-2-1-2	<i>Indica</i>	BL	4.00	14.00	15.00	1.00	3.00	5.00	3.00	2.67	4.67	13.42	192.53	337.40
CT18245-4-7-1-1-2-1	<i>Indica</i>	BL	2.33	13.33	14.83	1.67	3.33	4.00	3.00	3.00	3.67	12.15	156.30	215.61
CT18247-12-8-1-4-2-2	<i>Indica</i>	BL	2.00	9.17	12.83	2.00	3.67	4.33	3.00	3.00	3.33	9.61	98.94	201.86
CT18372-8-1-6-3-1-5	<i>Indica</i>	BL	2.00	10.83	13.83	1.00	3.33	5.33	3.00	3.00	3.33	10.92	149.20	363.55
CT18593-1-7-2-2-5	<i>Indica</i>	BL	2.00	7.33	10.17	1.67	3.33	6.00	3.00	3.00	3.33	9.92	79.26	204.60
CT18614-4-1-2-3-2	<i>Indica</i>	BL	2.00	9.67	13.67	1.33	4.67	5.67	3.00	2.33	4.33	11.27	147.54	300.23
CT18615-1-5-1-2-1	<i>Indica</i>	BL	2.67	12.33	13.83	1.33	3.67	4.33	3.00	3.00	3.33	12.06	146.44	225.04
CT19561-3-57-2P-2-1-2-M	<i>Indica</i>	BL	2.00	10.33	11.67	1.33	3.67	4.33	3.00	3.00	3.67	11.55	122.95	190.39
CT6510-24-1-2	<i>Japonica</i>	BL	2.33	9.67	10.50	1.00	3.33	4.00	3.00	3.00	3.33	6.56	80.47	139.17
CT6946-9-1-2-M-1P	<i>Indica</i>	BL	2.67	12.67	15.00	1.33	3.33	3.67	3.00	3.00	3.67	11.86	142.16	147.02
FEDEARROZ 2000	<i>Indica</i>	RL	3.33	12.67	16.00	1.33	3.67	3.67	3.00	3.00	4.00	9.43	149.71	202.38
FEDEARROZ 21	<i>Indica</i>	RL	3.00	12.50	14.33	2.00	3.67	4.33	3.00	3.33	4.00	14.26	198.36	251.45
FEDEARROZ 473	<i>Indica</i>	RL	1.67	11.50	12.67	1.00	3.67	5.33	3.00	3.00	4.33	10.38	117.42	220.74
FEDEARROZ MOCARE	<i>Indica</i>	RL	2.67	13.33	14.17	2.00	4.00	5.00	3.00	3.00	4.00	15.68	171.23	251.94
RU1402174	<i>Indica</i>	BL	2.67	11.83	14.83	1.33	3.33	4.67	3.33	3.00	4.33	11.11	106.51	164.89
HHZ 1-Y4-Y1	<i>Indica</i>	BL	2.00	9.50	14.67	2.00	3.33	5.33	3.00	2.67	3.33	9.76	118.17	268.45
IR09L179	<i>Indica</i>	BL	3.00	10.50	10.83	1.00	3.00	2.67	3.00	2.67	3.67	7.36	70.59	96.32
IR6 (PAKISTAN)	<i>Indica</i>	BL	3.00	9.33	12.33	1.33	3.33	4.67	3.00	3.00	3.33	12.82	89.76	178.41
IR64-EMF NIL	<i>Japonica</i>	BL	3.00	11.83	14.00	1.00	3.67	4.33	3.00	2.67	3.67	11.30	130.79	225.15

Cultivar Name	Classification	Type	Plant Height, (cm plant ⁻¹)			Tiller Number, (no. plant ⁻¹)			Leaf Number, (no. plant ⁻¹)			Leaf Area, (cm ² plant ⁻¹)		
			LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT
IR65600-81-5-2-3	<i>Japonica</i>	BL	3.33	9.83	12.67	1.00	3.33	4.33	3.00	2.67	4.00	8.83	95.43	225.46
IR78049-25-2-2-2	<i>Japonica</i>	BL	2.33	11.00	14.17	1.00	3.33	4.67	2.67	3.33	3.33	11.64	142.86	194.83
IR86052-32-3-2	<i>Japonica</i>	BL	4.00	15.83	17.33	1.00	3.67	3.00	3.00	3.00	4.00	10.60	138.98	172.33
IR86635-2-3-3-3	<i>Japonica</i>	BL	4.33	12.17	15.00	1.00	4.33	4.00	3.00	3.00	4.00	14.69	185.02	279.01
IRRI 123	<i>Japonica</i>	RL	1.33	8.17	8.00	1.00	3.00	3.67	3.00	3.00	3.33	8.29	54.49	113.73
MILYANG 240	<i>Japonica</i>	RL	2.33	10.83	14.17	1.33	3.33	4.67	3.00	3.00	3.67	10.56	125.23	265.72
WAB 56-125	<i>Japonica</i>	BL	2.00	9.67	13.17	1.33	3.67	4.33	3.00	3.00	4.00	8.93	131.62	189.56
Cheniere	<i>Japonica</i>	RL	1.33	7.50	11.50	1.00	1.67	2.00	2.33	2.67	3.33	4.86	32.59	64.55
Rex	<i>Japonica</i>	RL	2.33	8.00	11.17	1.00	2.33	3.00	3.00	3.00	3.67	15.14	54.94	87.21
Thad	<i>Japonica</i>	RL	2.67	8.83	10.33	1.00	2.33	1.67	2.67	2.67	3.33	8.66	53.23	62.66
Sabine	<i>Japonica</i>	RL	3.00	10.83	12.17	1.00	2.33	2.33	3.00	2.67	3.33	8.92	103.50	77.05
CL151	<i>Japonica</i>	RL	3.67	10.67	14.50	1.00	3.00	3.67	3.00	3.00	3.67	8.97	82.16	170.36
CL163	<i>Indica</i>	RL	2.67	10.83	10.50	1.00	3.00	3.00	3.00	3.33	3.33	9.34	69.29	119.62
RU1504083	<i>Indica</i>	BL	2.67	9.83	11.50	1.00	2.67	3.00	2.67	3.00	3.33	7.92	73.15	137.96
RU1504122	<i>Indica</i>	BL	2.67	8.50	13.17	1.00	2.33	3.00	3.00	3.00	3.33	10.47	52.90	119.86
RU1504154	<i>Indica</i>	BL	3.00	11.00	13.50	1.00	3.33	3.67	3.00	3.00	3.33	9.49	69.48	172.60
RU1404196	<i>Indica</i>	BL	3.67	11.00	15.17	1.00	2.67	3.67	3.00	3.00	3.00	8.99	88.29	146.91
RU1504197	<i>Indica</i>	BL	3.33	11.17	12.33	1.00	3.00	3.00	3.00	3.00	3.00	6.73	76.36	106.96
Bowman	<i>Indica</i>	RL	2.67	9.67	10.93	1.00	2.33	2.33	3.00	3.00	3.33	5.08	59.69	140.19
El Paso 144	<i>Indica</i>	RL	2.33	9.67	13.17	1.00	2.33	2.67	3.00	2.67	3.33	12.60	76.06	155.32
RU1504114	<i>Japonica</i>	BL	4.00	13.33	16.33	1.00	2.67	3.00	3.00	3.00	3.33	13.40	88.03	148.05
RU1504198	<i>Japonica</i>	BL	4.00	12.00	13.67	1.33	2.33	3.00	2.33	3.00	4.00	13.44	58.22	115.33
Taggart	<i>Japonica</i>	RL	4.33	11.00	13.17	1.00	2.67	2.33	3.00	3.00	3.67	8.45	61.33	109.24
IrGA 409	<i>Japonica</i>	RL	3.33	11.50	17.33	1.00	3.00	4.00	2.67	3.00	3.33	11.02	106.38	160.48
INIA Tacuari	<i>Japonica</i>	RL	3.67	12.00	13.33	1.00	2.33	2.33	3.00	3.00	4.33	5.21	67.66	109.28
RU1204156	<i>Japonica</i>	BL	4.00	11.83	13.33	1.33	3.00	4.00	3.00	3.00	3.00	10.38	134.47	165.64
RoyJ	<i>Japonica</i>	RL	4.67	12.77	15.33	1.00	3.00	2.67	3.00	3.00	3.67	9.20	81.28	130.86
MERMENTAU	<i>Indica</i>	RL	2.33	11.83	16.67	1.00	3.00	3.33	3.00	2.67	3.00	10.37	101.29	151.65

Cultivar Name	Classification	Type	Plant Height, (cm plant ⁻¹)			Tiller Number, (no. plant ⁻¹)			Leaf Number, (no. plant ⁻¹)			Leaf Area, (cm ² plant ⁻¹)		
			LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT
RU1404156	<i>Japonica</i>	BL	4.00	11.67	13.33	1.00	2.67	3.00	3.00	3.00	3.33	13.35	96.59	160.54
RU1204197	<i>Japonica</i>	BL	2.67	8.83	14.83	1.00	2.33	3.00	3.00	2.67	3.33	8.24	105.18	108.02
CL271	<i>Japonica</i>	RL	4.33	12.27	16.50	1.33	3.67	3.33	3.00	3.00	3.67	12.42	130.52	166.64
CL111	<i>Japonica</i>	RL	3.33	8.17	15.33	1.00	2.33	3.33	3.00	3.00	3.33	11.39	84.87	142.68
RU1304154	<i>Japonica</i>	BL	3.00	11.43	13.17	1.67	3.00	3.33	3.00	3.00	3.00	8.91	95.41	157.08
LAKAST	<i>Japonica</i>	RL	4.00	8.50	12.17	1.00	2.33	3.33	3.00	2.00	3.33	10.02	86.40	127.02
NIPONBARE	<i>Japonica</i>	RL	5.33	11.00	13.00	1.00	3.33	3.67	3.00	2.67	3.00	12.16	89.55	132.29
JES	<i>Japonica</i>	RL	3.33	11.33	13.33	1.00	2.67	2.67	3.00	3.00	3.33	11.08	84.36	80.37
RU0603075	<i>Japonica</i>	BL	2.00	10.33	11.00	1.67	3.33	5.00	3.00	2.67	3.67	12.34	144.14	249.27
RU1303138	<i>Japonica</i>	BL	2.33	10.93	12.67	1.67	4.00	4.00	3.00	3.00	4.00	9.53	125.04	199.56
N-22	<i>Aus</i>	RL	2.33	11.33	17.67	1.00	3.00	4.00	3.00	3.33	4.00	10.06	124.49	214.41
Mean			2.93	10.97	13.53	1.21	3.16	3.76	2.97	2.94	3.60	10.54	109.73	178.64
Genotypes			***	***	***	***	***	***	N.S	N.S	N.S	***	***	***
Temperature			***			***			***			***		
G X T			***			N.S			N.S			***		

Supplementary Table S2. Dry weight traits measured in low temperature (LT), optimum temperature (OT) and high temperature (HT) stress conditions in 64 rice genotypes. *, **, *** represent Significance levels at $p \leq 0.05$, $p \leq 0.01$, and $p \leq 0.001$. NS represents non-significant.

Cultivar Name	Classification	Type	Leaf Dry Weight (g plant ⁻¹)			Stem Dry Weight (g plant ⁻¹)			Root Dry Weight (g plant ⁻¹)			Shoot Dry Weight (g plant ⁻¹)			Total Dry weight (g plant ⁻¹)		
			LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT
12DS-GMET-15	<i>Indica</i>	BL	0.03	0.47	0.61	0.02	0.33	0.61	0.03	0.25	0.27	0.05	0.80	1.22	0.08	1.05	1.49
12DS-GMET-25	<i>Indica</i>	BL	0.05	0.39	0.84	0.02	0.50	0.94	0.04	0.20	0.28	0.07	0.88	1.78	0.10	1.08	2.06
Apo	<i>Indica</i>	RL	0.04	0.48	0.64	0.02	0.38	0.56	0.03	0.15	0.22	0.06	0.86	1.21	0.09	1.01	1.43
COLOMBIA XXI	<i>Indica</i>	RL	0.03	0.57	0.65	0.02	0.31	0.65	0.01	0.18	0.25	0.05	0.88	1.31	0.06	1.06	1.56
CT18233-15-6-6-4-8-1	<i>Indica</i>	BL	0.04	0.38	0.65	0.02	0.36	0.72	0.03	0.24	0.27	0.06	0.73	1.37	0.08	0.97	1.64
CT18237-13-11-3-3-5-1	<i>Indica</i>	BL	0.05	0.49	0.79	0.01	0.43	0.76	0.02	0.18	0.38	0.06	0.92	1.55	0.08	1.09	1.92
CT18244-9-4-4-2-1-2	<i>Indica</i>	BL	0.06	0.39	0.42	0.02	0.40	0.92	0.02	0.24	0.30	0.08	0.79	1.35	0.10	1.03	1.65
CT18245-4-7-1-1-2-1	<i>Indica</i>	BL	0.04	0.45	0.49	0.01	0.42	0.69	0.03	0.20	0.32	0.06	0.87	1.17	0.08	1.07	1.50
CT18247-12-8-1-4-2-2	<i>Indica</i>	BL	0.04	0.32	0.48	0.02	0.31	0.64	0.02	0.25	0.26	0.06	0.62	1.13	0.07	0.87	1.39
CT18372-8-1-6-3-1-5	<i>Indica</i>	BL	0.04	0.56	0.76	0.01	0.31	0.82	0.02	0.17	0.20	0.05	0.87	1.58	0.07	1.04	1.78
CT18593-1-7-2-2-5	<i>Indica</i>	BL	0.04	0.31	0.93	0.01	0.31	0.61	0.03	0.17	0.27	0.05	0.62	1.54	0.08	0.80	1.81
CT18614-4-1-2-3-2	<i>Indica</i>	BL	0.04	0.40	0.88	0.02	0.32	0.86	0.03	0.17	0.28	0.07	0.73	1.74	0.10	0.90	2.02
CT18615-1-5-1-2-1	<i>Indica</i>	BL	0.05	0.58	0.62	0.02	0.36	0.69	0.03	0.23	0.24	0.07	0.94	1.31	0.09	1.17	1.54
CT19561-3-57-2P-2-1-2-M	<i>Indica</i>	BL	0.04	0.61	0.70	0.01	0.41	0.49	0.02	0.18	0.18	0.05	1.02	1.19	0.07	1.20	1.37
CT6510-24-1-2	<i>Japonica</i>	BL	0.03	0.57	0.59	0.01	0.22	0.35	0.02	0.15	0.17	0.05	0.78	0.94	0.06	0.94	1.11
CT6946-9-1-2-M-1P	<i>Indica</i>	BL	0.03	0.42	0.61	0.01	0.27	0.44	0.03	0.16	0.22	0.04	0.69	1.05	0.07	0.85	1.27
FEDEARROZ 2000	<i>Indica</i>	RL	0.05	0.55	0.66	0.02	0.36	0.54	0.03	0.18	0.22	0.06	0.91	1.20	0.09	1.09	1.42
FEDEARROZ 21	<i>Indica</i>	RL	0.04	0.45	0.75	0.02	0.41	0.75	0.04	0.18	0.25	0.06	0.85	1.51	0.11	1.03	1.75
FEDEARROZ 473	<i>Indica</i>	RL	0.06	0.27	0.62	0.01	0.32	0.61	0.02	0.17	0.20	0.06	0.59	1.22	0.08	0.76	1.43
FEDEARROZ MOCARE	<i>Indica</i>	RL	0.03	0.34	0.85	0.02	0.37	0.65	0.05	0.22	0.25	0.05	0.71	1.50	0.10	0.94	1.75
RU1402174	<i>Indica</i>	BL	0.05	0.59	0.73	0.02	0.37	0.68	0.03	0.20	0.25	0.07	0.96	1.40	0.09	1.15	1.65
HHZ 1-Y4-Y1	<i>Indica</i>	BL	0.03	0.34	0.67	0.01	0.35	0.76	0.03	0.18	0.33	0.05	0.69	1.43	0.07	0.87	1.76
IR09L179	<i>Indica</i>	BL	0.04	0.49	0.40	0.02	0.19	0.23	0.03	0.17	0.14	0.06	0.68	0.63	0.09	0.85	0.77

Cultivar Name	Classification	Type	Leaf Dry Weight (g plant ⁻¹)			Stem Dry Weight (g plant ⁻¹)			Root Dry Weight (g plant ⁻¹)			Shoot Dry Weight (g plant ⁻¹)			Total Dry weight (g plant ⁻¹)		
			LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT
IR6 (PAKISTAN)	<i>Indica</i>	BL	0.03	0.44	0.77	0.01	0.20	0.49	0.03	0.23	0.29	0.04	0.64	1.27	0.07	0.87	1.56
IR64-EMF NIL	<i>Japonica</i>	BL	0.03	0.36	0.55	0.02	0.31	0.65	0.02	0.21	0.26	0.05	0.67	1.20	0.07	0.88	1.45
IR65600-81-5-2-3	<i>Japonica</i>	BL	0.04	0.60	0.77	0.02	0.32	0.84	0.02	0.13	0.38	0.05	0.92	1.61	0.11	1.05	1.99
IR78049-25-2-2-2	<i>Japonica</i>	BL	0.04	0.18	0.74	0.08	0.41	0.89	0.02	0.17	0.51	0.12	0.59	1.63	0.14	0.76	2.13
IR86052-32-3-2	<i>Japonica</i>	BL	0.04	0.47	0.76	0.02	0.36	0.51	0.02	0.18	0.20	0.07	0.83	1.27	0.09	1.00	1.47
IR86635-2-3-3-3	<i>Japonica</i>	BL	0.04	0.43	0.65	0.02	0.63	0.89	0.03	0.32	0.24	0.06	1.06	1.55	0.09	1.38	1.79
IRRI 123	<i>Japonica</i>	RL	0.03	0.28	0.89	0.01	0.10	0.17	0.01	0.14	0.16	0.04	0.38	1.07	0.05	0.52	1.23
MILYANG 240	<i>Japonica</i>	RL	0.03	0.50	0.68	0.02	0.36	0.68	0.03	0.20	0.41	0.04	0.86	1.36	0.07	1.06	1.77
WAB 56-125	<i>Japonica</i>	BL	0.04	0.25	0.66	0.01	0.43	0.78	0.01	0.16	0.23	0.05	0.68	1.44	0.06	0.84	1.67
Cheniere	<i>Japonica</i>	RL	0.04	0.31	0.61	0.01	0.15	0.20	0.01	0.18	0.17	0.05	0.46	0.81	0.05	0.64	0.98
Rex	<i>Japonica</i>	RL	0.04	0.45	0.72	0.01	0.15	0.40	0.01	0.13	0.18	0.05	0.60	1.13	0.06	0.74	1.31
Thad	<i>Japonica</i>	RL	0.03	0.45	0.92	0.01	0.13	0.20	0.01	0.16	0.13	0.05	0.57	1.12	0.06	0.73	1.25
Sabine	<i>Japonica</i>	RL	0.02	0.27	0.81	0.02	0.18	0.22	0.01	0.12	0.11	0.04	0.45	1.02	0.05	0.57	1.13
CL151	<i>Japonica</i>	RL	0.04	0.55	0.50	0.01	0.23	0.56	0.02	0.10	0.19	0.05	0.78	1.06	0.07	0.88	1.25
CL163	<i>Indica</i>	RL	0.04	0.36	0.93	0.02	0.23	0.32	0.02	0.19	0.16	0.06	0.59	1.24	0.08	0.78	1.40
RU1504083	<i>Indica</i>	BL	0.04	0.29	0.62	0.01	0.20	0.32	0.02	0.15	0.16	0.05	0.49	0.94	0.07	0.65	1.11
RU1504122	<i>Indica</i>	BL	0.04	0.39	0.62	0.02	0.13	0.38	0.02	0.11	0.16	0.05	0.52	1.00	0.07	0.63	1.16
RU1504154	<i>Indica</i>	BL	0.05	0.40	0.77	0.01	0.20	0.46	0.01	0.18	0.17	0.06	0.60	1.23	0.07	0.78	1.40
RU1404196	<i>Indica</i>	BL	0.04	0.25	0.66	0.01	0.28	0.55	0.03	0.14	0.15	0.05	0.53	1.21	0.07	0.67	1.36
RU1504197	<i>Indica</i>	BL	0.03	0.41	0.57	0.01	0.21	0.34	0.03	0.16	0.15	0.05	0.62	0.91	0.07	0.78	1.06
Bowman	<i>Indica</i>	RL	0.03	0.35	0.53	0.01	0.13	0.35	0.02	0.10	0.27	0.04	0.48	0.88	0.06	0.58	1.14
El Paso 144	<i>Indica</i>	RL	0.04	0.38	0.89	0.01	0.22	0.56	0.01	0.15	0.34	0.05	0.60	1.45	0.06	0.75	1.79
RU1504114	<i>Japonica</i>	BL	0.04	0.14	0.60	0.03	0.20	0.54	0.04	0.21	0.26	0.07	0.34	1.13	0.10	0.56	1.39
RU1504198	<i>Japonica</i>	BL	0.03	0.45	0.92	0.02	0.17	0.34	0.02	0.22	0.23	0.05	0.63	1.26	0.07	0.84	1.49
Taggart	<i>Japonica</i>	RL	0.04	0.47	0.47	0.06	0.25	0.27	0.02	0.17	0.23	0.09	0.72	0.75	0.11	0.89	0.98
IrGA 409	<i>Japonica</i>	RL	0.05	0.34	0.86	0.02	0.36	0.59	0.02	0.27	0.27	0.07	0.70	1.45	0.10	0.97	1.72
INIA Tacuari	<i>Japonica</i>	RL	0.02	0.20	0.93	0.01	0.23	0.37	0.02	0.12	0.18	0.03	0.43	1.30	0.04	0.55	1.48
RU1204156	<i>Japonica</i>	BL	0.03	0.45	0.29	0.02	0.27	0.61	0.04	0.16	0.40	0.06	0.72	0.90	0.09	0.88	1.30

Cultivar Name	Classification	Type	Leaf Dry Weight (g plant ⁻¹)			Stem Dry Weight (g plant ⁻¹)			Root Dry Weight (g plant ⁻¹)			Shoot Dry Weight (g plant ⁻¹)			Total Dry weight (g plant ⁻¹)		
			LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT
RoyJ	<i>Japonica</i>	RL	0.05	0.44	0.77	0.02	0.28	0.45	0.03	0.20	0.26	0.07	0.72	1.21	0.10	0.92	1.47
MERMENTAU	<i>Indica</i>	RL	0.03	0.32	0.63	0.02	0.29	0.60	0.07	0.19	0.20	0.05	0.61	1.23	0.12	0.79	1.43
RU1404156	<i>Japonica</i>	BL	0.05	0.41	0.72	0.02	0.20	0.46	0.04	0.19	0.20	0.07	0.61	1.18	0.11	0.80	1.38
RU1204197	<i>Japonica</i>	BL	0.04	0.30	1.13	0.01	0.18	0.49	0.02	0.16	0.24	0.05	0.48	1.62	0.07	0.64	1.85
CL271	<i>Japonica</i>	RL	0.06	0.35	0.99	0.03	0.38	0.50	0.04	0.16	0.23	0.09	0.73	1.49	0.13	0.89	1.72
CL111	<i>Japonica</i>	RL	0.04	0.24	0.68	0.02	0.30	0.45	0.03	0.18	0.19	0.06	0.54	1.13	0.10	0.72	1.32
RU1304154	<i>Japonica</i>	BL	0.03	0.40	0.58	0.01	0.30	0.45	0.04	0.10	0.21	0.05	0.69	1.03	0.09	0.79	1.24
LAKAST	<i>Japonica</i>	RL	0.05	0.37	1.09	0.02	0.23	0.58	0.03	0.14	0.19	0.07	0.60	1.68	0.10	0.74	1.87
NIPONBARE	<i>Japonica</i>	RL	0.05	0.45	0.90	0.04	0.22	0.37	0.04	0.22	0.18	0.09	0.67	1.27	0.13	0.89	1.45
JES	<i>Japonica</i>	RL	0.04	0.43	0.51	0.02	0.26	0.27	0.02	0.16	0.24	0.05	0.69	0.78	0.07	0.85	1.02
RU0603075	<i>Japonica</i>	BL	0.04	0.45	0.68	0.02	0.28	0.62	0.03	0.14	0.24	0.06	0.73	1.29	0.10	0.87	1.53
RU1303138	<i>Japonica</i>	BL	0.03	0.47	0.66	0.03	0.38	0.48	0.02	0.19	0.17	0.06	0.84	1.14	0.08	1.03	1.31
N-22	<i>Aus</i>	RL	0.04	0.42	0.97	0.01	0.23	0.62	0.02	0.21	0.30	0.05	0.65	1.59	0.07	0.86	1.89
Mean			0.04	0.40	0.71	0.03	0.29	0.54	0.02	0.18	0.24	0.06	0.69	1.25	0.08	0.87	1.49
Genotypes			*	*	n.s	***	***	***	N.S	*	***	**	**	***	*	*	**
Temperature			***			***			***			***			***		
G X T			N.S			***			*			**			***		

Supplementary Table S3. Root growth traits: Root length (RL), root surface area (RSA), root root diameter (RAD), root volume (RV), and longest root length (LRL), measured in low temperature (LT), optimum temperature (OT) and high temperature (HT) stress conditions in 64 rice genotypes. BL – breeding genotypes; RL – released genotypes. *, **, *** represent Significance levels at $p \leq 0.05$, $p \leq 0.01$, and $p \leq 0.001$. NS represents non-significant.

Cultivar Name	Classification	Type	Root Length (cm plant ⁻¹)			Root Surface Area (cm ² plant ⁻¹)			Root Avg Diameter (mm plant ⁻¹)			Root Volume (cm ³ plant ⁻¹)			Longest root length (cm plant ⁻¹)		
			LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT
12DS-GMET-15	<i>Indica</i>	BL	545	4056	3898	56	448	409	0.33	0.36	0.34	0.46	4.01	3.52	18.3	39.3	40.7
12DS-GMET-25	<i>Indica</i>	BL	674	3642	4834	69	415	513	0.32	0.37	0.34	0.57	3.80	4.34	21.0	43.0	39.7
Apo	<i>Indica</i>	RL	568	2508	3800	60	273	378	0.34	0.35	0.32	0.51	2.39	3.01	15.0	40.3	33.7
COLOMBIA XXI	<i>Indica</i>	RL	377	3262	4328	39	345	410	0.32	0.34	0.30	0.32	2.95	3.11	13.7	39.7	35.0
CT18233-15-6-6-4-8-1	<i>Indica</i>	BL	442	3645	4245	47	401	460	0.33	0.36	0.35	0.41	3.58	3.98	16.0	39.3	34.0
CT18237-13-11-3-3-5-1	<i>Indica</i>	BL	424	3600	5055	41	397	550	0.31	0.36	0.35	0.32	3.54	4.78	17.7	43.0	40.3
CT18244-9-4-4-2-1-2	<i>Indica</i>	BL	431	3828	5132	42	417	555	0.32	0.35	0.34	0.34	3.64	4.81	14.3	44.7	38.7
CT18245-4-7-1-1-2-1	<i>Indica</i>	BL	455	3405	4848	47	378	493	0.31	0.35	0.33	0.39	3.36	3.99	12.7	41.0	33.7
CT18247-12-8-1-4-2-2	<i>Indica</i>	BL	419	2536	4172	39	290	424	0.30	0.36	0.33	0.29	2.65	3.49	14.7	40.3	36.7
CT18372-8-1-6-3-1-5	<i>Indica</i>	BL	441	2919	4613	45	301	497	0.32	0.33	0.35	0.36	2.48	4.30	15.0	41.3	38.3
CT18593-1-7-2-2-5	<i>Indica</i>	BL	604	2491	3875	60	270	397	0.32	0.35	0.32	0.48	2.36	3.26	19.3	43.3	38.3
CT18614-4-1-2-3-2	<i>Indica</i>	BL	505	3594	4056	55	476	381	0.35	0.44	0.30	0.50	5.44	2.85	16.3	38.3	35.0
CT18615-1-5-1-2-1	<i>Indica</i>	BL	299	3199	3891	31	380	391	0.33	0.38	0.32	0.26	3.61	3.13	14.7	43.3	33.3
CT19561-3-57-2P-2-1-2-M	<i>Indica</i>	BL	477	2706	3522	47	294	346	0.32	0.35	0.31	0.37	2.54	2.71	17.0	39.0	32.3
CT6510-24-1-2	<i>Japonica</i>	BL	313	2198	3022	34	233	304	0.34	0.34	0.31	0.30	1.97	2.45	12.0	42.0	41.0
CT6946-9-1-2-M-1P	<i>Indica</i>	BL	442	2799	3211	47	300	298	0.33	0.35	0.29	0.40	2.56	2.21	14.3	41.7	36.7
FEDEARROZ 2000	<i>Indica</i>	RL	469	3178	3678	50	336	365	0.34	0.34	0.32	0.44	2.84	2.90	17.0	43.7	31.7
FEDEARROZ 21	<i>Indica</i>	RL	664	3160	4235	65	321	406	0.31	0.32	0.30	0.52	2.61	3.16	17.3	40.3	36.7
FEDEARROZ 473	<i>Indica</i>	RL	313	2801	3419	32	310	364	0.34	0.35	0.34	0.26	2.75	3.15	11.3	40.0	42.3
FEDEARROZ MOCARE	<i>Indica</i>	RL	803	3710	3915	83	384	383	0.33	0.33	0.31	0.68	3.21	2.99	19.7	42.0	34.3
RU1402174	<i>Indica</i>	BL	475	2659	3194	46	288	325	0.31	0.34	0.32	0.36	2.48	2.64	16.7	47.0	39.7
HHZ 1-Y4-Y1	<i>Indica</i>	BL	372	2344	3900	37	267	446	0.32	0.37	0.36	0.30	2.48	4.18	14.0	37.3	37.0
IR09L179	<i>Indica</i>	BL	643	1939	2295	55	195	193	0.27	0.34	0.27	0.38	1.59	1.30	16.7	32.3	29.3
IR6 (PAKISTAN)	<i>Indica</i>	BL	557	2175	3964	56	237	393	0.34	0.35	0.31	0.48	2.07	3.12	16.3	30.7	30.0
IR64-EMF NIL	<i>Japonica</i>	BL	621	3170	3850	57	320	379	0.29	0.32	0.30	0.43	2.58	3.03	16.7	43.7	36.7

Cultivar Name	Classification	Type	Root Length (cm plant ⁻¹)			Root Surface Area (cm ² plant ⁻¹)			Root Avg Diameter (mm plant ⁻¹)			Root Volume (cm ³ plant ⁻¹)			Longest root length (cm plant ⁻¹)		
			LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT
IR65600-81-5-2-3	<i>Japonica</i>	BL	528	2135	4976	46	233	510	0.28	0.35	0.32	0.34	2.05	4.20	14.3	40.3	38.7
IR78049-25-2-2-2	<i>Japonica</i>	BL	267	3343	4627	35	348	499	0.42	0.34	0.33	0.36	2.91	4.35	13.0	40.0	39.3
IR86052-32-3-2	<i>Japonica</i>	BL	446	2731	2639	49	254	238	0.36	0.29	0.29	0.43	1.90	1.72	14.7	40.7	36.3
IR86635-2-3-3-3	<i>Japonica</i>	BL	541	3338	4488	58	382	477	0.34	0.36	0.34	0.50	3.56	4.06	17.3	43.7	41.0
IRRI 123	<i>Japonica</i>	RL	221	1426	2652	21	139	231	0.35	0.32	0.28	0.18	1.08	1.60	10.3	40.7	57.7
MILYANG 240	<i>Japonica</i>	RL	403	2889	4545	44	305	484	0.35	0.33	0.33	0.40	2.57	4.24	15.3	40.0	165.7
WAB 56-125	<i>Japonica</i>	BL	259	3331	3353	26	355	372	0.32	0.34	0.36	0.21	3.02	3.34	13.0	41.0	38.7
Cheniere	<i>Japonica</i>	RL	373	1267	2222	35	122	178	0.32	0.31	0.27	0.27	0.93	1.18	14.0	40.3	37.3
Rex	<i>Japonica</i>	RL	355	1659	2395	38	166	227	0.35	0.32	0.29	0.32	1.32	1.73	16.3	39.3	42.0
Thad	<i>Japonica</i>	RL	298	1772	2297	32	199	205	0.34	0.36	0.29	0.28	1.78	1.45	12.7	43.0	43.3
Sabine	<i>Japonica</i>	RL	217	1465	1796	23	140	159	0.35	0.30	0.29	0.20	1.06	1.14	11.3	39.3	39.7
CL151	<i>Japonica</i>	RL	471	2090	3038	49	213	271	0.35	0.33	0.28	0.41	1.73	1.92	15.7	41.7	36.7
CL163	<i>Indica</i>	RL	387	2122	2807	41	235	274	0.35	0.36	0.31	0.35	2.08	2.14	13.7	42.3	49.7
RU1504083	<i>Indica</i>	BL	279	1809	2642	33	205	274	0.38	0.36	0.33	0.30	1.85	2.27	15.7	40.7	36.7
RU1504122	<i>Indica</i>	BL	238	1066	2059	27	114	206	0.35	0.34	0.32	0.24	0.96	1.67	8.7	31.7	35.0
RU1504154	<i>Indica</i>	BL	290	2177	2824	32	219	282	0.37	0.32	0.32	0.29	1.76	2.28	13.3	37.3	35.0
RU1404196	<i>Indica</i>	BL	386	2071	2363	42	226	241	0.35	0.35	0.33	0.36	1.96	2.02	14.3	40.7	43.3
RU1504197	<i>Indica</i>	BL	465	2190	2266	51	234	202	0.35	0.34	0.28	0.44	2.00	1.45	18.3	40.3	41.3
Bowman	<i>Indica</i>	RL	486	1665	3033	51	184	272	0.35	0.35	0.29	0.43	1.62	2.03	15.3	39.0	44.0
El Paso 144	<i>Indica</i>	RL	396	1849	2855	41	195	278	0.34	0.33	0.31	0.34	1.64	2.16	12.7	35.0	36.3
RU1504114	<i>Japonica</i>	BL	580	1934	3049	60	232	349	0.33	0.38	0.35	0.50	2.22	3.21	19.7	43.0	47.3
RU1504198	<i>Japonica</i>	BL	454	1870	2577	46	205	271	0.33	0.35	0.33	0.38	1.82	2.30	18.3	42.0	45.3
Taggart	<i>Japonica</i>	RL	439	1772	2434	47	195	250	0.35	0.36	0.32	0.40	1.71	2.05	16.7	38.3	44.7
IrGA 409	<i>Japonica</i>	RL	542	3115	4178	56	336	438	0.33	0.35	0.33	0.47	2.89	3.68	19.7	40.3	44.7
INIA Tacuari	<i>Japonica</i>	RL	419	2320	3255	44	247	307	0.33	0.35	0.30	0.37	2.10	2.31	12.7	45.7	44.0
RU1204156	<i>Japonica</i>	BL	685	2484	3527	71	255	320	0.34	0.33	0.30	0.60	2.08	2.34	20.3	42.0	42.7
RoyJ	<i>Japonica</i>	RL	445	2192	2743	49	239	328	0.37	0.35	0.38	0.44	2.07	3.14	15.3	38.0	44.0
MERMENTAU	<i>Indica</i>	RL	484	2543	3535	55	268	338	0.36	0.34	0.30	0.50	2.28	2.59	17.7	44.3	39.7

Cultivar Name	Classification	Type	Root Length (cm plant ⁻¹)			Root Surface Area (cm ² plant ⁻¹)			Root Avg Diameter (mm plant ⁻¹)			Root Volume (cm ³ plant ⁻¹)			Longest root length (cm plant ⁻¹)		
			LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT
RU1404156	<i>Japonica</i>	BL	649	1952	2961	70	212	277	0.35	0.34	0.30	0.60	1.85	2.06	15.7	38.0	39.7
RU1204197	<i>Japonica</i>	BL	482	2097	3129	50	207	273	0.34	0.32	0.28	0.42	1.64	1.92	14.3	35.0	38.3
CL271	<i>Japonica</i>	RL	781	3065	3562	76	333	357	0.33	0.34	0.32	0.60	2.89	2.88	20.0	44.0	40.3
CL111	<i>Japonica</i>	RL	611	2111	3138	68	230	300	0.35	0.34	0.30	0.60	2.03	2.31	19.7	46.0	37.7
RU1304154	<i>Japonica</i>	BL	490	2606	3080	49	272	290	0.32	0.33	0.30	0.40	2.27	2.18	17.7	45.7	40.3
LAKAST	<i>Japonica</i>	RL	468	1997	2799	54	205	281	0.37	0.32	0.31	0.50	1.69	2.26	15.0	33.7	36.0
NIPONBARE	<i>Japonica</i>	RL	592	2186	2687	66	210	252	0.36	0.31	0.30	0.59	1.62	1.88	19.3	37.3	38.0
JES	<i>Japonica</i>	RL	547	2331	2495	54	239	197	0.32	0.33	0.26	0.42	1.98	1.26	15.0	42.7	31.0
RU0603075	<i>Japonica</i>	BL	620	2269	4187	64	222	445	0.33	0.31	0.34	0.52	1.74	3.87	17.7	41.7	37.0
RU1303138	<i>Japonica</i>	BL	664	3484	4277	61	339	389	0.29	0.31	0.30	0.44	2.65	2.87	17.7	45.7	40.0
N-22	<i>Aus</i>	RL	400	2753	4062	42	283	430	0.34	0.33	0.34	0.36	2.33	3.70	15.3	44.0	43.0
Mean			469	2547	3445	48	273	344	0.33	0.34	0.31	0.40	2.36	2.78	15.7	40.6	40.9
Genotypes			**	***	***	**	***	***	N.S	N.S	J.N.S	*	***	***	**	N.S	N.S
Temperature			***			***			***			***			***		
G X T			**			***			N.S			**			N.S		

Supplementary Table S4. Root tips (RT), root forks (RF), root crossings (RC), root number (RN), and root: shoot ratio measured in low temperature (LT), optimum temperature (OT), and high temperature (HT) stress conditions in 64 rice genotypes. BL – breeding genotypes; RL – released genotypes. *, **, *** represent Significance levels at $p \leq 0.05$, $p \leq 0.01$, and $p \leq 0.001$. NS represents non-significant.

Cultivar Name	Classification	Type	Root tips (no. plant ⁻¹)			Root forks (no. plant ⁻¹)			Root crossings (no. plant ⁻¹)			Root Number (no. plant ⁻¹)			Root/Shoot		
			LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT
12DS-GMET-15	<i>Indica</i>	BL	7670	25622	42210	3580	52719	44318	287	5414	3777	12.7	48.7	54.3	0.5	0.3	0.2
12DS-GMET-25	<i>Indica</i>	BL	5821	23039	29634	5319	45364	58136	590	4910	6289	12.7	36.3	47.0	0.5	0.2	0.2
Apo	<i>Indica</i>	RL	6105	18109	33059	4299	27116	45456	409	2761	4721	15.0	32.0	34.7	0.6	0.2	0.2
COLOMBIA XXI	<i>Indica</i>	RL	3411	24769	31180	2721	41901	58819	355	4581	7130	9.3	26.7	38.7	0.4	0.2	0.2
CT18233-15-6-6-4-8-1	<i>Indica</i>	BL	3527	29185	37190	4871	49168	51500	564	4984	4658	10.0	31.0	40.7	0.4	0.3	0.2
CT18237-13-11-3-3-5-1	<i>Indica</i>	BL	4293	25872	40167	3589	44778	58599	411	4628	5306	9.0	32.3	52.7	0.2	0.2	0.2
CT18244-9-4-4-2-1-2	<i>Indica</i>	BL	6453	27045	44305	3171	51547	60282	334	5680	6257	11.0	31.7	49.7	0.3	0.3	0.2
CT18245-4-7-1-1-2-1	<i>Indica</i>	BL	3690	23325	44796	4910	40372	65266	590	3975	7084	11.0	46.3	42.7	0.5	0.2	0.3
CT18247-12-8-1-4-2-2	<i>Indica</i>	BL	5649	19242	35357	3292	28959	48101	332	2771	5048	11.0	35.0	43.0	0.3	0.5	0.2
CT18372-8-1-6-3-1-5	<i>Indica</i>	BL	7182	23703	46694	2943	35100	58392	236	3692	5077	12.0	34.7	55.0	0.4	0.2	0.1
CT18593-1-7-2-2-5	<i>Indica</i>	BL	6419	15076	35774	5273	23562	44167	567	2680	4478	11.7	24.3	35.3	0.6	0.3	0.2
CT18614-4-1-2-3-2	<i>Indica</i>	BL	5377	30038	38818	4050	50294	51271	371	5310	5251	14.3	49.0	31.3	0.4	0.2	0.2
CT18615-1-5-1-2-1	<i>Indica</i>	BL	4510	25609	32179	2233	35556	48676	168	3280	4917	10.3	48.3	57.0	0.4	0.3	0.2
CT19561-3-57-2P-2-1-2-M	<i>Indica</i>	BL	4471	18581	30192	4567	31272	46151	515	3161	5099	10.3	28.3	40.0	0.3	0.2	0.2
CT6510-24-1-2	<i>Japonica</i>	BL	4252	19320	26043	2454	21792	33899	264	2094	3312	9.0	23.7	38.7	0.4	0.2	0.2
CT6946-9-1-2-M-1P	<i>Indica</i>	BL	4690	19593	27828	3899	32175	33565	391	3396	3371	14.7	35.0	34.0	0.7	0.2	0.2
FEDEARROZ 2000	<i>Indica</i>	RL	5800	18407	39760	3140	31567	41728	277	3258	4118	14.7	30.7	43.7	0.4	0.2	0.2
FEDEARROZ 21	<i>Indica</i>	RL	8471	23721	49804	5501	35853	57019	568	3726	5949	16.7	35.7	41.3	0.7	0.2	0.2
FEDEARROZ 473	<i>Indica</i>	RL	4492	19494	28748	2079	33429	49381	160	3158	5051	7.7	33.0	42.7	0.3	0.4	0.2
FEDEARROZ MOCARE	<i>Indica</i>	RL	7336	26594	34528	8286	44772	50644	943	4720	5338	15.3	32.3	41.0	1.0	0.3	0.2
RU1402174	<i>Indica</i>	BL	6686	15487	23258	3623	21479	33991	303	2292	3807	13.0	22.7	30.7	0.4	0.2	0.2
HHZ 1-Y4-Y1	<i>Indica</i>	BL	5354	21391	37334	3057	27000	58253	281	2428	5995	16.0	32.0	48.0	0.6	0.3	0.2
IR09L179	<i>Indica</i>	BL	11029	12964	33053	4979	20972	20433	548	2403	2049	10.0	27.3	26.0	0.4	0.2	0.2
IR6 (PAKISTAN)	<i>Indica</i>	BL	6342	16721	41838	4032	23442	38955	433	2321	3805	14.0	36.3	45.3	0.8	0.4	0.2
IR64-EMF NIL	<i>Japonica</i>	BL	9348	22369	37741	4939	43843	50879	491	4955	5354	11.0	30.7	38.0	0.4	0.3	0.2

Cultivar Name	Classification	Type	Root tips (no. plant ⁻¹)			Root forks (no. plant ⁻¹)			Root crossings (no. plant ⁻¹)			Root Number (no. plant ⁻¹)			Root/Shoot		
			LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT
IR65600-81-5-2-3	<i>Japonica</i>	BL	10170	17123	46208	3191	25542	75626	272	2613	8502	9.7	25.3	34.3	0.3	0.1	0.2
IR78049-25-2-2-2	<i>Japonica</i>	BL	1871	24615	39164	2580	42525	58492	261	4597	5658	6.7	29.0	46.7	0.3	0.3	0.3
IR86052-32-3-2	<i>Japonica</i>	BL	3562	20492	22110	4283	32890	33112	483	3792	3787	7.7	21.3	27.3	0.2	0.2	0.2
IR86635-2-3-3-3	<i>Japonica</i>	BL	5896	22394	38026	4504	40955	65274	393	4229	7094	15.7	28.3	40.3	0.6	0.3	0.2
IRRI 123	<i>Japonica</i>	RL	5737	12742	31168	1432	14957	30682	96	1542	3251	3.3	18.7	21.0	0.2	0.4	0.2
MILYANG 240	<i>Japonica</i>	RL	4962	18675	36993	2795	34227	54396	246	3605	5818	12.3	22.7	47.3	0.6	0.2	0.3
WAB 56-125	<i>Japonica</i>	BL	5354	25641	30861	1520	40673	42804	103	4174	3973	4.7	33.7	44.0	0.2	0.2	0.2
Cheniere	<i>Japonica</i>	RL	9064	13010	42018	1659	10525	16741	100	1042	1572	4.7	16.3	21.3	0.2	0.4	0.2
Rex	<i>Japonica</i>	RL	3677	13464	17883	2645	13926	20032	253	1567	2134	6.3	18.0	22.7	0.2	0.2	0.2
Thad	<i>Japonica</i>	RL	3556	15560	21095	2348	14213	19466	196	1351	2351	8.3	17.7	20.3	0.3	0.3	0.1
Sabine	<i>Japonica</i>	RL	3359	16397	23522	1484	12833	13307	117	1322	1514	6.0	14.3	18.0	0.4	0.3	0.1
CL151	<i>Japonica</i>	RL	5043	18195	41525	4195	23621	28952	497	2508	3025	8.7	27.3	23.0	0.4	0.1	0.2
CL163	<i>Indica</i>	RL	4974	14777	24319	3138	17100	25022	259	1768	2873	10.0	17.3	23.0	0.6	0.3	0.1
RU1504083	<i>Indica</i>	BL	2954	14367	18293	1967	16806	25427	151	1653	2793	8.3	17.7	31.0	0.3	0.3	0.2
RU1504122	<i>Indica</i>	BL	3622	10000	17787	1482	8929	20864	99	858	2107	7.0	15.3	25.3	0.4	0.2	0.2
RU1504154	<i>Indica</i>	BL	4696	18487	22866	1535	23382	23764	102	2495	2414	5.7	21.7	27.3	0.2	0.3	0.1
RU1404196	<i>Indica</i>	BL	5151	12936	26681	3101	17567	21312	230	1811	1991	10.0	20.0	21.0	0.5	0.3	0.1
RU1504197	<i>Indica</i>	BL	5118	22517	22385	3667	20852	18603	341	2191	2110	9.3	17.0	19.3	0.6	0.3	0.2
Bowman	<i>Indica</i>	RL	7185	14130	50036	3508	12687	23878	333	1260	2364	8.7	22.0	20.7	0.5	0.2	0.3
El Paso 144	<i>Indica</i>	RL	6460	15478	26193	2567	20049	26521	233	2064	2776	6.3	17.0	26.3	0.2	0.3	0.2
RU1504114	<i>Japonica</i>	BL	6137	14478	21348	5348	16546	32168	482	1593	3232	11.7	20.3	33.0	0.5	0.7	0.2
RU1504198	<i>Japonica</i>	BL	4671	12972	16965	3680	15544	20967	339	1554	2295	11.0	19.3	23.3	0.5	0.4	0.2
Taggart	<i>Japonica</i>	RL	4821	11685	15648	3279	15406	18556	341	1661	2090	8.7	17.7	21.7	0.3	0.2	0.3
IrGA 409	<i>Japonica</i>	RL	8807	18283	35528	3780	31707	43612	293	3414	4720	8.7	28.0	31.7	0.3	0.4	0.2
INIA Tacuari	<i>Japonica</i>	RL	4344	15341	20507	3340	24288	31842	345	2720	3730	9.3	17.3	27.0	0.7	0.3	0.1
RU1204156	<i>Japonica</i>	BL	7501	17560	43806	5349	22352	31116	518	2693	3221	12.3	23.7	28.0	0.7	0.3	0.4
RoyJ	<i>Japonica</i>	RL	6036	12681	18307	3181	19037	25285	220	2026	2264	8.7	31.7	29.7	0.4	0.3	0.2
MERMENTAU	<i>Indica</i>	RL	5425	15923	36178	3895	23869	34761	324	2743	3604	11.3	21.7	32.3	1.5	0.3	0.2

Cultivar Name	Classification	Type	Root tips (no. plant ⁻¹)			Root forks (no. plant ⁻¹)			Root crossings (no. plant ⁻¹)			Root Number (no. plant ⁻¹)			Root/Shoot		
			LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT
RU1404156	<i>Japonica</i>	BL	8112	16658	23757	5402	19657	29608	521	2132	3870	12.3	23.7	26.0	0.5	0.3	0.2
RU1204197	<i>Japonica</i>	BL	7377	15383	35028	3197	19293	30824	252	2287	3522	8.7	19.7	23.0	0.5	0.4	0.1
CL271	<i>Japonica</i>	RL	7528	21538	32487	8177	31867	41547	909	3300	4594	12.3	26.0	26.3	0.6	0.2	0.2
CL111	<i>Japonica</i>	RL	4832	15922	35881	5859	18294	30620	619	1861	3132	10.7	21.7	28.7	0.6	0.3	0.2
RU1304154	<i>Japonica</i>	BL	7399	14588	31392	3815	23744	35325	262	2605	3902	8.3	22.0	25.7	1.0	0.2	0.2
LAKAST	<i>Japonica</i>	RL	4440	19653	15715	3725	20108	26430	349	2258	3007	10.3	17.0	29.0	0.5	0.2	0.1
NIPONBARE	<i>Japonica</i>	RL	5838	14764	17126	4626	24950	31088	482	3001	3518	16.3	31.0	31.0	0.4	0.3	0.1
JES	<i>Japonica</i>	RL	8642	16953	41165	3898	28021	22834	339	3144	2407	8.7	27.0	20.7	0.4	0.2	0.3
RU0603075	<i>Japonica</i>	BL	7911	19853	36302	5393	26692	49975	566	3025	4793	11.3	21.7	31.7	0.5	0.2	0.2
RU1303138	<i>Japonica</i>	BL	11119	24916	49881	5225	43932	56354	480	4866	5951	11.0	31.3	36.7	0.4	0.2	0.1
N-22	<i>Aus</i>	RL	5508	19507	26099	2749	27520	46724	284	3231	5202	7.3	23.3	34.7	0.4	0.3	0.2
Mean			5894	18827	32090	3724	27986	38934	361	2955	4069	10.32	26.70	33.62	0.47	0.28	0.20
Genotypes			N.S	N.S	N.S	*	***	***	*	**	***	***	***	***	*	*	*
Temperature			***			***			***			***			***		
G X T			N.S			***			***			***			***		

Supplementary Table S5. Chlorophyll concentration and chlorophyll fluorescence measured in low temperature (LT), optimum temperature (OT), and high temperature (HT) stress conditions in 64 rice genotypes. BL – breeding genotypes; RL – released genotypes. *, **, *** represent Significance levels at $p \leq 0.05$, $p \leq 0.01$, and $p \leq 0.001$. NS represents non-significant.

Cultivar Name	Classification	Type	SPAD (g cm ² plant ⁻¹)			Fo			Fm			Fv			Fv/Fm		
			LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT
12DS-GMET-15	<i>Indica</i>	BL	12	35	30	7813	12019	9601	17376	38818	30636	10230	26800	23035	0.59	0.69	0.76
12DS-GMET-25	<i>Indica</i>	BL	15	27	35	8554	11227	9428	20415	41239	29043	13195	28345	19615	0.65	0.69	0.67
Apo	<i>Indica</i>	RL	14	31	34	7763	11736	10710	22799	42546	34701	16703	30810	23991	0.74	0.72	0.69
COLOMBIA XXI	<i>Indica</i>	RL	15	31	36	10541	11292	10718	29137	43029	39446	16596	31737	28729	0.55	0.74	0.73
CT18233-15-6-6-4-8-1	<i>Indica</i>	BL	10	29	39	8973	11314	8897	29905	40747	25829	21599	29433	16931	0.73	0.72	0.65
CT18237-13-11-3-3-5-1	<i>Indica</i>	BL	10	34	33	8478	10739	9200	13326	37734	29628	8181	26995	20428	0.61	0.71	0.68
CT18244-9-4-4-2-1-2	<i>Indica</i>	BL	16	33	38	9298	10458	10371	23574	36781	32496	12610	26323	27792	0.53	0.72	0.86
CT18245-4-7-1-1-2-1	<i>Indica</i>	BL	15	32	35	9593	12549	9948	25928	46161	32944	17335	30278	22996	0.67	0.65	0.70
CT18247-12-8-1-4-2-2	<i>Indica</i>	BL	13	32	35	5108	11238	9861	16921	37215	31384	11813	25976	21522	0.69	0.70	0.68
CT18372-8-1-6-3-1-5	<i>Indica</i>	BL	8	25	31	5342	12506	9753	13484	40324	32738	8141	27819	23083	0.60	0.69	0.70
CT18593-1-7-2-2-5	<i>Indica</i>	BL	16	33	37	7980	11552	9710	28592	42611	35989	19312	31059	26280	0.66	0.73	0.73
CT18614-4-1-2-3-2	<i>Indica</i>	BL	12	27	33	8854	10902	10176	22559	35285	34061	14705	24383	23885	0.67	0.69	0.70
CT18615-1-5-1-2-1	<i>Indica</i>	BL	12	32	32	8143	10273	10262	22034	36715	34378	14558	26442	26449	0.65	0.72	0.78
CT19561-3-57-2P-2-1-2-M	<i>Indica</i>	BL	9	31	35	8181	10035	10295	21955	34993	32154	13774	24958	22858	0.62	0.71	0.71
CT6510-24-1-2	<i>Japonica</i>	BL	13	28	34	3699	12246	9222	10224	42318	31506	6858	32073	24617	0.67	0.76	0.79
CT6946-9-1-2-M-1P	<i>Indica</i>	BL	13	30	31	7477	12213	10447	14773	37669	32467	10629	25456	22021	0.72	0.68	0.67
FEDEARROZ 2000	<i>Indica</i>	RL	13	28	30	6681	11964	9504	16277	50318	28176	10597	38354	18672	0.67	0.76	0.66
FEDEARROZ 21	<i>Indica</i>	RL	9	34	32	8734	11585	10501	25809	42884	31839	17075	31299	21338	0.66	0.73	0.67
FEDEARROZ 473	<i>Indica</i>	RL	13	33	35	7344	10717	8154	23830	40900	26408	14153	32183	18254	0.60	0.79	0.68
FEDEARROZ MOCARE	<i>Indica</i>	RL	16	33	32	10507	11985	9222	30376	38601	32012	19535	26616	22790	0.64	0.68	0.71
RU1402174	<i>Indica</i>	BL	12	34	40	10287	10393	8875	25586	37004	26165	17632	26611	20623	0.71	0.72	0.80
HHZ 1-Y4-Y1	<i>Indica</i>	BL	12	33	27	6995	11411	11877	20850	40476	38558	13855	29065	30014	0.67	0.72	0.80
IR09L179	<i>Indica</i>	BL	12	32	34	7429	11205	8442	22557	40422	24936	14128	31550	16494	0.60	0.80	0.66
IR6 (PAKISTAN)	<i>Indica</i>	BL	17	33	35	6238	11368	9872	30380	39848	28744	26143	28480	20872	0.86	0.71	0.72
IR64-EMF NIL	<i>Japonica</i>	BL	7	30	32	7662	10186	10414	20466	28700	31410	13470	18514	27662	0.62	0.65	0.89

Cultivar Name	Classification	Type	SPAD (g cm ² plant ⁻¹)			Fo			Fm			Fv			Fv/Fm		
			LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT
IR65600-81-5-2-3	<i>Japonica</i>	BL	8	33	41	7987	11433	9254	14381	39100	31709	7060	27667	22454	0.47	0.71	0.71
IR78049-25-2-2-2	<i>Japonica</i>	BL	14	31	31	8875	10897	8810	18882	37736	28393	13340	27506	19583	0.69	0.73	0.68
IR86052-32-3-2	<i>Japonica</i>	BL	15	33	30	8592	13463	10143	23045	38684	23633	15120	26221	16823	0.66	0.68	0.70
IR86635-2-3-3-3	<i>Japonica</i>	BL	13	34	38	9265	10555	9276	23373	39522	31308	14441	28967	22032	0.62	0.73	0.70
IRRI 123	<i>Japonica</i>	RL	8	30	33	3198	14445	11964	14922	43922	41094	13149	31810	29130	0.88	0.72	0.71
MILYANG 240	<i>Japonica</i>	RL	10	32	32	7312	11097	9688	19646	37474	33898	12335	26377	24210	0.58	0.70	0.70
WAB 56-125	<i>Japonica</i>	BL	10	32	35	9528	10393	8485	25828	33009	28588	16300	22617	20102	0.63	0.69	0.70
Cheniere	<i>Japonica</i>	RL	5	29	32	6484	10089	9265	19394	36230	29660	14910	29474	23473	0.79	0.83	0.82
Rex	<i>Japonica</i>	RL	8	34	33	7239	10046	9970	22432	37459	36888	15193	25413	30252	0.68	0.68	0.85
Thad	<i>Japonica</i>	RL	16	34	37	8020	10338	9786	21146	37431	35350	15793	27093	25565	0.74	0.72	0.72
Sabine	<i>Japonica</i>	RL	9	28	33	9081	10978	10663	27683	38225	39149	20269	28247	28486	0.74	0.74	0.73
CL151	<i>Japonica</i>	RL	11	29	30	8895	12029	11002	32211	42307	27779	21983	30278	17777	0.69	0.72	0.63
CL163	<i>Indica</i>	RL	11	40	37	9927	10051	10154	26372	32528	38309	17779	28477	28155	0.69	0.88	0.74
RU1504083	<i>Indica</i>	BL	13	30	34	6687	10870	10208	16049	39880	41618	9362	29010	29743	0.53	0.73	0.71
RU1504122	<i>Indica</i>	BL	10	31	33	8756	11671	10154	20194	40335	34787	16438	28664	24632	0.81	0.71	0.71
RU1504154	<i>Indica</i>	BL	6	32	32	4423	10750	8897	27012	39399	25391	18922	28649	16494	0.71	0.73	0.64
RU1404196	<i>Indica</i>	BL	10	30	35	8853	9764	9786	20005	40172	30766	11151	32075	20980	0.51	0.80	0.68
RU1504197	<i>Indica</i>	BL	7	40	37	9677	9385	10284	29325	28501	31828	19648	19117	21544	0.66	0.64	0.68
Bowman	<i>Indica</i>	RL	7	27	37	9297	11422	9363	21697	43098	29487	13400	31676	20124	0.61	0.73	0.68
El Paso 144	<i>Indica</i>	RL	9	31	39	6211	11888	8181	18047	35107	26529	16004	24886	18347	1.05	0.72	0.69
RU1504114	<i>Japonica</i>	BL	15	34	33	8290	9493	8344	29391	28794	26821	21101	19301	18477	0.73	0.66	0.67
RU1504198	<i>Japonica</i>	BL	13	30	30	10511	10371	9742	27379	40088	31524	20202	29717	21782	0.75	0.74	0.69
Taggart	<i>Japonica</i>	RL	11	28	36	8452	10111	9384	23234	42069	31590	14782	31958	22206	0.63	0.76	0.70
IrGA 409	<i>Japonica</i>	RL	9	38	36	8962	9298	9326	33356	27512	27006	23727	22547	22347	0.72	0.80	0.82
INIA Tacuari	<i>Japonica</i>	RL	11	39	40	8484	9482	10013	27101	27331	32352	20617	17848	22339	0.76	0.64	0.68
RU1204156	<i>Japonica</i>	BL	10	31	36	7450	12560	8897	23900	41820	26680	14783	29260	17783	0.62	0.70	0.67
RoyJ	<i>Japonica</i>	RL	12	31	39	9395	10414	9471	22703	34255	39290	13308	23841	31819	0.58	0.69	0.82
MERMENTAU	<i>Indica</i>	RL	14	34	34	11164	10804	9070	26034	39977	28609	16869	29173	19539	0.65	0.73	0.67

Cultivar Name	Classification	Type	SPAD (g cm ² plant ⁻¹)			Fo			Fm			Fv			Fv/Fm		
			LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT	LT	OT	HT
RU1404156	<i>Japonica</i>	BL	7	33	31	13307	11119	10274	32949	35583	36066	22976	27131	25792	0.71	0.79	0.71
RU1204197	<i>Japonica</i>	BL	9	33	37	10220	10685	8839	20053	39046	29829	18500	28694	22657	0.92	0.74	0.79
CL271	<i>Japonica</i>	RL	14	32	37	10896	10111	8886	32148	33844	29509	22919	23733	20623	0.72	0.67	0.70
CL111	<i>Japonica</i>	RL	17	34	34	13195	11704	10847	28020	38558	38731	18159	28854	27884	0.65	0.75	0.72
RU1304154	<i>Japonica</i>	BL	12	30	34	8897	10837	10284	25841	36629	33833	16945	25792	23549	0.65	0.70	0.69
LAKAST	<i>Japonica</i>	RL	16	32	39	7352	9168	9135	26737	34126	30744	17385	27958	21609	0.65	0.82	0.69
NIPONBARE	<i>Japonica</i>	RL	17	34	34	8106	10631	9197	21554	40173	28945	13449	29542	21415	0.61	0.74	0.75
JES	<i>Japonica</i>	RL	16	28	34	8937	12734	9374	25651	38645	33844	19381	27244	23874	0.78	0.71	0.71
RU0603075	<i>Japonica</i>	BL	15	32	33	6994	11855	9839	18016	41267	28646	13355	29412	18807	0.76	0.71	0.65
RU1303138	<i>Japonica</i>	BL	13	30	31	13037	11005	9677	38481	36484	31210	25444	26145	21533	0.66	0.72	0.69
N-22	<i>Aus</i>	RL	17	29	36	7612	10737	9872	22494	42753	34397	16215	29092	24524	0.70	0.69	0.71
Mean			12	32	34	8394	11059	9707	23372	38319	31773	15868	27704	22803	0.68	0.72	0.72
Genotypes			***	N.S	***	***	**	*	***	***	***	***	***	***	*	*	*
Temperature			***			***			***			***			***		
G X T			N.S			***			***			***			***		

Supplementary Table S6. Multiple linear regression of combined high-temperature response index (CHTRI) and combined low-temperature response index (CLTRI) with the individual responses index of twenty-four traits in response to low and high temperature. *, **, *** represent Significance levels at $p \leq 0.05$, $p \leq 0.01$, and $p \leq 0.001$. NS represents non-significant.

	CLTRI with all traits				CHTRI with all traits			
	Estimate	Std. Error	t value	Pr(> t)	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-1.38	2.19	-0.63	0.53	1.709	1.73	0.987	0.329
PHT	1.38	1.23	1.12	0.27	1.231	0.184	6.691	0.000***
TN	1.05	0.78	1.35	0.19	1.005	0.186	5.407	0.000***
LN	0.41	0.64	0.65	0.52	1.389	0.18	7.731	0.000***
LA	2.35	2.06	1.14	0.26	0.918	0.098	9.408	0.000***
LWT	-3.22	3.34	-0.96	0.34	1.332	0.174	7.672	0.000***
StWT	1.59	3.11	0.51	0.61	1.174	0.155	7.568	0.000***
RWT	13.23	1.83	7.24	0.00***	1.564	0.162	9.655	0.000***
SHWT	-13.18	8.32	-1.59	0.12	0.351	0.565	0.62	0.539
TdWT	9.53	7.85	1.21	0.23	0.444	0.597	0.743	0.462
RL	15.58	15.24	1.02	0.31	0.376	1.367	0.275	0.785
RSA	-12.34	27	-0.46	0.65	2.522	2.57	0.982	0.332
AvgRD	3	1.66	1.81	0.08	0.225	1.133	0.199	0.843
RV	2.06	15.3	0.13	0.89	0.277	1.385	0.2	0.843
LRL	-2.03	1.13	-1.79	0.08	1.185	0.078	15.213	< 2e-16***
Tips	1.5	1.19	1.26	0.22	0.881	0.108	8.137	0.000***
Forks	-15.46	6.18	-2.5	0.02*	1.249	0.505	2.475	0.018*
CR	12.04	5.07	2.37	0.02*	0.927	0.37	2.506	0.016*
RN	1.97	0.73	2.72	0.01**	0.677	0.147	4.615	0.000***
SPAD	1.56	0.62	2.53	0.02*	1.165	0.265	4.392	0.000***
Fo	1.45	0.52	2.8	0.01**	0.793	0.446	1.777	0.083
Fm	3.53	1.99	1.78	0.08	0.597	1.501	0.398	0.693
Fv	-1.19	2.06	-0.58	0.57	1.248	1.477	0.845	0.403
FvFm	1.94	1.11	1.74	0.09	0.723	1.295	0.558	0.58

