Supplementary Table S1a. ANOVA (treatment adjusted) of 96 accessions of aromatic rices analysed for 11 quantitative traits

Source	D.F.	CL	FLL	FLW	GB	GL	GYPP	PBT	PdL	PH	PL	TGW
Block (ignoring Treatments)	5	697.3**	36.03**	0.03ns	0.27**	4**	16.04**	53.86**	72.58**	598.12**	7.66**	83.2**
Treatment (eliminating Blocks)	95	245.43**	23.93**	0.03ns	0.09**	2.34**	18.78**	18.52**	34.21**	305.34**	7.09**	22.47**
Treatment: Check	3	957.38**	171.16**	0.03ns	0.02*	24.33**	19.79**	13.26ns	114.74**	1229.37**	20.23**	78.68**
Treatment: Test and Test vs. Check	92	222.21**	19.13**	0.03ns	0.09**	1.63**	18.74**	18.7**	31.58**	275.21**	6.66**	20.64**
Residuals	15	12.66	1.8	0.01	0.01	0.03	3.39	4.6	3.13	28.52	0.95	2.56

*, ** Significant at 0.05 and 0.01 level of probability; ns non-significant.

Supplementary Table S1b. ANOVA (block adjusted) of 96 accessions of aromatic rices analysed for 11 quantitative traits

Source	D.F.	CL	FLL	FLW	GB	GL	GYPP	PBT	PdL	PH	PL	TGW
Block (ignoring Blocks)	95	275.07**	25.7**	0.03ns	0.11**	2.55**	19.49**	20.31**	37.84**	327.31**	7.42**	26.61**
Treatment: Check	3	957.38**	171.16**	0.03ns	0.02*	24.33**	19.79**	13.26ns	114.74**	1229.37**	20.23**	78.68**
Treatment: Test vs. Check	1	93.23*	53.8**	0.06ns	0.24**	24.61**	7.85ns	6.67ns	13.81ns	111.3ns	10.54**	70.28**
Treatment: Test	91	254.57**	20.6**	0.03ns	0.11**	1.59**	19.61**	20.69**	35.57**	299.95**	6.96**	24.42**
Block (eliminating Treatments)	5	134.13**	2.42ns	0.01ns	0.0038 ns	0.01ns	2.43ns	19.96*	3.56ns	180.68**	1.45ns	4.5ns
Residuals	15	12.66	1.8	0.01	0.01	0.03	3.39	4.6	3.13	28.52	0.95	2.56

Supplementary Table S2. Mean values and standard deviation for three clusters formed by hierarchical clustering

Traits	Parameters	Clusters Mean		
		Cluster I	Cluster II	Cluster III
Culm length	Mean	55.78	76.16	94.62
	Standard deviation	15.76	10.70	7.23
Flag leaf length	Mean	26.74	22.65	21.78
	Standard deviation	5.99	2.78	1.98
Flag leaf width	Mean	1.23	1.27	1.27
	Standard deviation	0.26	0.12	0.15
Panicle bearing tillers	Mean	10.27	13.61	19.47
	Standard deviation	3.03	3.71	6.51
Peduncle length	Mean	37.97	29.24	34.79
	Standard deviation	7.14	2.80	2.61
Plant height	Mean	119.64	128.26	155.54
	Standard deviation	22.30	11.90	8.50
Panicle length	Mean	25.22	23.06	26.14
	Standard deviation	2.95	2.17	1.24
Grain length	Mean	8.21	6.30	6.45
	Standard deviation	1.17	0.86	1.04
Grain breadth	Mean	2.47	2.02	1.98
	Standard deviation	0.35	0.18	0.18
Grain yield per plant	Mean	11.80	9.01	10.62
	Standard deviation	4.67	4.00	2.89
1000-Grain weight	Mean	17.85	9.45	10.36
	Standard deviation	3.19	2.80	3.07

Supplementary Table S3 Principal Component analysis in 96 accessions of aromatic rice landraces

Variables	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10
Culm length	0.357	-0.377	0.021	-0.074	0.055	-0.120	0.497	0.125	0.051	-0.258
Flag leaf length	-0.225	0.003	-0.170	-0.632	0.619	-0.076	0.070	-0.342	0.077	0.062
Flag leaf width	-0.037	-0.177	0.695	-0.521	-0.095	0.108	-0.171	0.373	-0.137	-0.009
Panicle bearing tillers	0.288	-0.165	-0.032	0.292	0.654	0.426	-0.257	0.339	-0.009	0.118
Peduncle length	-0.329	-0.412	-0.220	0.042	-0.085	0.164	-0.037	-0.097	-0.770	0.110
Plant height	0.210	-0.566	-0.078	-0.029	-0.061	-0.062	0.339	-0.075	0.110	0.156
Panicle length	-0.161	-0.501	-0.195	-0.068	-0.213	0.111	-0.552	-0.119	0.480	-0.213
Grain length	-0.421	-0.075	-0.076	0.170	0.249	-0.442	0.022	0.432	-0.045	-0.539
Grain breadth	-0.367	0.093	0.028	0.017	-0.061	0.724	0.435	-0.007	0.180	-0.316
Grain yield per plant	-0.186	-0.183	0.623	0.436	0.235	-0.117	0.017	-0.528	0.047	-0.026
Thousand grain weight	-0.461	-0.103	0.007	0.113	-0.010	-0.108	0.205	0.347	0.318	0.665
Eigen Values	3.710	2.232	1.138	1.063	0.794	0.643	0.612	0.359	0.223	0.165
Standard deviation	1.926	1.494	1.067	1.031	0.891	0.802	0.782	0.599	0.472	0.407
Proportion of Variance	0.337	0.203	0.103	0.097	0.072	0.058	0.056	0.033	0.020	0.015
Cumulative Proportion	0.337	0.540	0.644	0.740	0.812	0.871	0.927	0.959	0.979	0.994

Supplementary Table S4. Shannon -Weiner index (H) and evenness (J) of aromatic rice landrace accessions

Sl. No.	Traits	Shannon-Weiner Index (H')	Evenness (J)
a)	**Qualitative traits**		
1.	Basal-leaf sheath colour	0.404	0.368
2.	Leaf blade colour	0.902	0.821
3.	Auricle colour	0.101	0.146
4.	Leaf blade pubescence	0.765	0.696
5.	Leaf blade attitude	0.604	0.871
6.	Awning	0.451	0.651
7.	Panicle exsertion	1.031	0.744
8.	Caryopsis pericarp colour	0.433	0.394
9.	Lemma and palea colour	1.009	0.627
b).	**Quantitative traits**		
1.	Culm length	1.767	0.767
2.	Flag-leaf length	1.191	0.612
3.	Flag-leaf width	1.681	0.655
4.	Panicle bearing tillers	1.254	0.779
5.	Plant height	1.866	0.811
6.	Peduncle length	1.480	0.761
7.	Panicle length	1.656	0.797
8.	Grain length	1.509	0.842
9.	Grain breadth	1.684	0.731
10.	Thousand grain weight	1.536	0.857
11.	Grain yield per plant	1.883	0.905

Supplementary Table S5. Passport data of aromatic rice landraces from Indo-Gangetic plains of India used in the assessment of genetic variation and allele mining of quality traits

Sl. No.	Acc. Code	IC Number	Name of Landrace	Geographical Coordinates (Latitude and Longitude)	District	State
1.	ARG01	IC0086170	Adamchini	25° 10' N 82° 33' E	Mirzapur	Uttar Pradesh
2.	ARG02	IC0553809	Adamchini	25° 10' N 82° 33' E	Mirzapur	Uttar Pradesh
3.	ARG03	IC0553863	Adamchini	24° 27' N 82° 59' E	Sonbhadra	Uttar Pradesh
4.	ARG04	IC0553848	Adamchini	24° 27' N 82° 59' E	Sonbhadra	Uttar Pradesh
5.	ARG05	IC0553871	Adamchini	35° 00' N 80° 00' E	Chandauli	Uttar Pradesh
6.	ARG06	IC0553887	Adamchini	35° 00' N 80° 00' E	Chandauli	Uttar Pradesh
7.	ARG07	IC0554649	Kalanamak	26° 53' N 83° 58' E	Kushinagar	Uttar Pradesh
8.	ARG08	IC0574862	Kalanamak-1	25° 08' N 83° 15' E	Chandauli	Uttar Pradesh
9.	ARG09	IC0553882	Badshahbhog	35° 00' N 80° 00' E	Chandauli	Uttar Pradesh
10.	ARG10	IC0574865	Kalanamak-3	26° 39' N 82° 00' E	Ayodhya	Uttar Pradesh
11.	ARG11	IC0554631	Kalanamak	27° 18' N 83° 43' E	Maharajganj	Uttar Pradesh
12.	ARG12	IC0554622	Kalanamak	27° 16' N 82° 49' E	Siddharthnagar	Uttar Pradesh
13.	ARG13	IC0554644	Kalanamak	27° 08' N 83° 33' E	Maharajganj	Uttar Pradesh
14.	ARG14	IC0553819	Kalanamak	25° 01' N 82° 33' E	Mirzapur	Uttar Pradesh
15.	ARG15	IC0554657	Sakkarchini	27° 08' N 81° 57' E	Gonda	Uttar Pradesh
16.	ARG16	IC0554618	Kalanamak	28° 39' N 79° 22' E	Bareilly	Uttar Pradesh
17.	ARG17	IC0554624	Kalanamak	26° 48' N 82° 45' E	Basti	Uttar Pradesh
18.	ARG18	IC0553830	Badshahbhog	25° 08' N 82° 33' E	Mirzapur	Uttar Pradesh
19.	ARG19	IC0553833	Badshahbhog	24° 27' N 82° 59' E	Sonbhadra	Uttar Pradesh
20.	ARG20	IC0554639	Sakkarchini	27° 25' N 82° 10' E	Balrampur	Uttar Pradesh
21.	ARG21	IC0554641	Sakkarchini	27° 34' N 81° 35' E	Bahraich	Uttar Pradesh
22.	ARG22	IC0553836	Sonachur	25° 08' N 82° 33' E	Mirzapur	Uttar Pradesh
23.	ARG23	IC0370895	Sonachur	25° 18' N 81° 57' E	Prayagraj	Uttar Pradesh
24.	ARG24	IC0553875	Sonachur	35° 00' N 80° 00' E	Chandauli	Uttar Pradesh
25.	ARG25	IC0370882	Thakurbhog	24° 27' N 82° 59' E	Sonbhadra	Uttar Pradesh
26.	ARG26	IC0554652	Badshah Pasand	27° 34' N 81° 35' E	Bahraich	Uttar Pradesh
27.	ARG27	IC0554638	Badshah Pasand	26° 28' N 81° 35' E	Ambedkar Nagar	Uttar Pradesh
28.	ARG28	IC0554627	Lal Mati	26° 46' N 81° 08' E	Ayodhya	Uttar Pradesh
29.	ARG29	IC0554633	Lal Mati	26° 55' N 81° 11' E	Barabanki	Uttar Pradesh
30.	ARG30	IC0553883	Tulsi Manjari	24° 27' N 82° 59' E	Sonbhadra	Uttar Pradesh
31.	ARG31	IC0553844	Tulsi Manjari	24° 27' N 82° 59' E	Sonbhadra	Uttar Pradesh
32.	ARG32	IC0554629	Dubraj	26° 55' N 81° 11' E	Raibarelly	Uttar Pradesh
33.	ARG33	IC0553879	Shyam Jeera	24° 27' N 82° 59' E	Sonbhadra	Uttar Pradesh
34.	ARG34	IC0554647	Kanak Jeera	27° 16' N 82° 49' E	Siddharthnagar	Uttar Pradesh
35.	ARG35	IC0554654	Gopalbhog	26° 46' N 83° 02' E	Sant Kabir Nagar	Uttar Pradesh
36.	ARG36	IC0553839	Govindbhog	25° 08' N 82° 33' E	Mirzapur	Uttar Pradesh
37.	ARG37	IC0554646	Juhi Bengal	27° 17' N 83° 05' E	Siddharthnagar	Uttar Pradesh
38.	ARG38	IC0574876	Dhania 32	26° 39' N 82° 00' E	Ayodhya	Uttar Pradesh
39.	ARG39	IC0574922	Tulsi Joha	27° 12' N 94° 09' E	Lakhimpur	Assam
40.	ARG40	IC0574875	Juhi Bengal	26° 39' N 82° 00' E	Ayodhya	Uttar Pradesh
41.	ARG41	IC0419241	Tulsi Prasad	30° 54' N 75° 48' E	PAU, Ludhiana*	Punjab
42.	ARG42	IC0419239	Tulsi Joha-b	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
43.	ARG43	IC0419238	Tulsi Joha-a	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
44.	ARG44	IC0418945	Chinnisakkar	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
45.	ARG45	IC0419046	Jeera Sail-a	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
46.	ARG46	IC0419047	Jeera Sail-b	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
47.	ARG47	IC0419219	Soribhog	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
48.	ARG48	IC0418906	Begami 1-T-1-A	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
49.	ARG49	IC0419006	Hansraj-a	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
50.	ARG50	IC0418918	Bindli sd mutant-a	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
51.	ARG51	IC0418919	Bindli sd mutant-b	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab

52.	ARG52	IC0418920	Bindli sd mutant-c	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
53.	ARG53	IC0419052	Kala Jira-245	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
54.	ARG54	IC0419055	Kala Jira 449-b	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
55.	ARG55	IC0419050	Kala Jira-8-1-a	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
56.	ARG56	IC0419053	Kala Jira-286	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
57.	ARG57	IC0419051	Kala Jira-8-1-b	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
58.	ARG58	IC0419054	Kala Jira 449-a	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
59.	ARG59	IC0418979	Dulhabhog	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
60.	ARG60	IC0574897	Malbhog Sataria	25° 46' N 85° 52' E	Samastipur	Bihar
61.	ARG61	IC0569188	Champaran Basmati	27° 90' N 84° 21' E	West Champaran	Bihar
62.	ARG62	IC0574775	Tulsimanjari I	25° 20' N 86° 58' E	Bhagalpur	Bihar
63.	ARG63	IC0574776	Tulsimanjari II	25° 20' N 86° 58' E	Bhagalpur	Bihar
64.	ARG64	IC0574843	Kalanamak	25° 46' N 85° 52' E	Samastipur	Bihar
65.	ARG65	IC0574883	Malbhog Sataria-B	25° 46' N 85° 52' E	Samastipur	Bihar
66.	ARG66	IC0574927	Sonachur	25° 46' N 85° 52' E	Samastipur	Bihar
67.	ARG67	IC0574793	Badshahbhog	25° 20' N 86° 58' E	Bhagalpur	Bihar
68.	ARG68	IC0574830	Badshahbhog	25° 46' N 85° 52' E	Samastipur	Bihar
69.	ARG69	IC0569410	Kalonuniya	26° 32' N 88° 43' E	Jalpaiguri	West Bengal
70.	ARG70	IC0470970	Badshahbhog	22° 08' N 88° 24' E	South 24 Parganas	West Bengal
71.	ARG71	IC0569444	Tulsibhog	25° 58' N 88° 30' E	North Dinajpur	West Bengal
72.	ARG72	IC0569416	Lal Badshahbhog	23° 16' N 86° 25' E	Puruliya	West Bengal
73.	ARG73	IC0584173	Haribhog	23° 28' N 88° 31' E	Nadia	West Bengal
74.	ARG74	IC0594002	Kanakchur	22° 11' N 88° 41' E	South 24 Parganas	West Bengal
75.	ARG75	IC0594012	Sitabhog	22° 08' N 88° 24' E	South 24 Parganas	West Bengal
76.	ARG76	IC0594017	Tulaipanji	22° 11' N 88° 48' E	South 24 Parganas	West Bengal
77.	ARG77	IC0569443	Tulaipanji	26° 20' N 89° 26' E	Cooch Behar	West Bengal
78.	ARG78	IC0596840	Kalonunia	22° 13' N 88° 46' E	South 24 Parganas	West Bengal
79.	ARG79	IC0596834	Gobindabhog	22° 09' N 88° 49' E	South 24 Parganas	West Bengal
80.	ARG80	IC0596837	Gobindabhog	22° 20' N 88° 41' E	South 24 Parganas	West Bengal
81.	ARG81	IC0470934	Gobindabhog	22° 08' N 88° 24' E	South 24 Parganas	West Bengal
82.	ARG82	IC0611186	Lal Basmati Local	31° 35' N 76° 55' E	Mandi	H.P.
83.	ARG83	IC0611190	Begami	32° 33' N 76° 07' E	Chamba	H.P.
84.	ARG84	IC0085729	Gandhasalai	12° 46' N 75° 12' E	Dakshina Kannada	Karnataka
85.	ARG85	IC0280808	Jeerakachampav	09° 51' N 76° 57' E	Idukki	Kerala
86.	ARG86	IC0591553	Wayanad Jeerakasala	11° 22' N 76° 07' E	Wayanad	Kerala
87.	ARG87	IC0520332	Jeerakasala	11° 51' N 75° 21' E	Kannur	Kerala
88.	ARG88	IC0121907	Ambemohar	21° 80' N 79° 05' E	Nagpur	Maharashtra
89.	ARG89	IC0574923	Tulsiamrit	17° 40' N 74° 10' E	Satara	Maharashtra
90.	ARG90	IC0618897	Jeeragasamba	09° 13' N 78° 25' E	Ramanathapuram	Tamil Nadu
91.	ARG91	IC0454228	Kamod	30° 54' N 75° 48' E	PAU, Ludhiana	Punjab
92.	ARG92	IC0553842	Tinsukhiya	25° 08' N 82° 33' E	Mirzapur	Uttar Pradesh
93.	ARG93	Check01	Badshahbhog	28° 38' N 77° 10' E	Genetics, IARI*	Delhi
94.	ARG94	Check02	Kalanamak	28° 38' N 77° 10' E	Genetics, IARI	Delhi
95.	ARG95	Check03	P1176	28° 38' N 77° 10' E	Genetics, IARI	Delhi
96.	ARG96	Check04	Taraori Basmati	28° 38' N 77° 10' E	Genetics, IARI	Delhi

**Abbreviations: PAU = Punjab agricultural University, Ludhiana; H.P. = Himachal Pradesh; Genetics IARI = Genetics Division of ICAR - Indian Agricultural Research Institute, New Delhi.*