

Supplementary Material

Genetic analysis and identification of QTLs associated with yield-enhancing traits in *Oryza sativa* IR64 × *Oryza glaberrima* interspecific backcross populations

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Supplemental Table S1: Augmented RCBD ANOVA for yield and yield attributing traits in BC₁F_{2:3} population

Source	Df	Days to 50% flowering	Plant Height (cm)	Tiller Number	Productive Tiller	Panicle Length (cm)	Spikelet Fertility (%)	Grain Yield (g plant ⁻¹)
Block (ignoring Treatments)	3	91.64 **	59.13 ns	120.97 **	75.8 **	2.01 ns	791.24 **	212.62 **
Treatment (eliminating Blocks)	150	63.7 **	244.01 **	4.65 ns	3.46 ns	4.65 ns	238.67 **	33.44 **
Check	4	140.18 **	208.36 **	11.08 *	4.63 ns	2.9 ns	31.58 **	15.07 *
Test and Test vs. Check	146	61.6 **	244.98 **	4.47 ns	3.43 ns	4.69 ns	244.35 **	33.95 **
Treatment (ignoring Blocks)	150	65.33 **	244.58 **	7.04 *	4.97 *	4.68 ns	254.32 **	37.16 **
Test vs. Check	1	4942.46 **	2603.32 **	147.56 **	120.62 **	42.65 **	2062.63 **	91.1 **
Treatment: Test	145	29.63 **	229.31 **	5.96 ns	4.18 ns	4.47 ns	247.99 **	37.39 **
Block (eliminating Treatments)	3	10.05 ns	30.42 ns	0.98 ns	0.6 ns	0.31 ns	8.91 ns	26.89 **
Residuals	12	4.68	29.9	2.61	1.89	2.08	4.5	4.41

Supplemental Table S2: Phenotypic data of BC1F2 population for yield and yield attributing traits

Genotype	Days to 50% Flowering	Plant Height	Tiller Number	Productive Tillers	Panicle Length	Spikelet Fertility	Grain yield per plant
GIL1	110	87	18	15	25.67	26.316	11.34
GIL2	97	56	26	20	23.73	6.863	2.92
GIL3	107	62	20	16	20.67	13.978	2.9
GIL4	108	61	6	3	20.67	8.805	2.92
GIL5	101	67	22	16	22.33	13.934	3.65
GIL6	102	77	16	9	24.00	13.514	3.96
GIL7	97	56	14	9	18.00	8.904	2.24
GIL8	112	56	6	4	18.33	4.943	1.73
GIL9	96	69	18	10	21.00	17.293	2.75
GIL10	96	64	13	8	18.33	5.830	1.8
GIL11	96	67	22	16	18.33	11.243	3.03
GIL12	96	65	19	10	19.17	25.325	3.98
GIL13	102	61	12	7	20.67	14.980	2.6
GIL14	102	61	9	4	19.00	4.762	1.5
GIL15	105	100	9	7	27.67	21.260	5.51
GIL16	105	110	9	9	25.03	40.529	6.91
GIL17	107	62	6	4	20.07	42.690	3.08
GIL18	110	74	4	4	24.00	55.046	4.4
GIL19	108	72	5	4	22.37	64.516	5.23
GIL20	104	78	7	7	23.67	67.742	13.39
GIL21	105	102	8	7	24.67	44.444	9.97
GIL22	105	102	7	7	23.33	29.329	6.83
GIL23	106	88	2	2	21.00	54.422	3.22
GIL24	105	77	5	5	24.67	78.261	11.89
GIL25	97	86	8	5	23.33	65.079	10.87
GIL26	94	105	8	5	27.03	40.000	6.74
GIL27	95	74	11	6	22.67	50.990	10.55
GIL28	101	133	13	13	25.67	56.818	17.03
GIL29	105	43	3	2	17.50	64.103	2.05
GIL30	104	112	9	9	26.33	58.333	14.37
GIL31	98	116	12	8	24.33	87.500	16.69
GIL32	105	94	3	3	23.33	55.665	4.54
GIL33	108	71	5	4	23.67	94.037	9.84
GIL34	94	125	21	18	25.00	85.195	32.72
GIL35	105	78	20	18	24.33	54.674	30.2
GIL36	107	77	10	10	24.00	76.923	12.68

GIL37	115	100	3	3	25.33	61.538	4.78
GIL38	108	105	7	7	24.00	65.500	13.19
GIL39	105	102	8	8	26.67	78.992	16.83
GIL40	106	59	5	3	20.33	19.048	2.37
GIL41	108	103	9	9	24.33	44.214	10.4
GIL42	111	100	6	6	27.33	30.556	6.38
GIL43	94	90	9	5	24.67	1.724	1.54
GIL44	95	83	7	5	22.33	86.294	9.95
GIL45	97	67	3	3	24.00	74.286	9.85
GIL46	95	100	5	5	24.00	66.667	3.79
GIL47	105	67	4	3	21.50	38.983	1.99
GIL48	100	96	6	6	23.67	39.516	6.29
GIL49	105	59	2	2	20.50	73.684	3.24
GIL50	94	74	4	3	23.33	53.571	6.35
GIL51	107	102	5	4	27.67	64.815	9.62
GIL52	110	77	9	4	21.00	55.446	6.53
GIL53	95	115	9	9	26.33	41.818	17.8
GIL54	105	82	17	15	24.67	94.872	40.78
GIL55	100	105	7	7	28.67	58.824	12.72
GIL56	108	65	9	7	21.00	50.207	5.51
GIL57	94	90	6	6	23.00	86.527	9.91
GIL58	97	89	8	5	23.33	67.890	12.07
GIL59	95	102	15	11	22.67	30.070	7.78
GIL60	103	104	11	9	25.67	53.937	8.43
GIL61	95	122	6	5	27.33	70.000	11.35
GIL62	106	73	7	7	21.00	73.333	11.76
GIL63	99	67	6	4	20.67	79.167	7.82
GIL64	91	102	11	9	27.33	12.863	6.46
GIL65	95	110	6	6	24.33	41.176	12.66
GIL66	95	82	5	4	24.67	52.381	6.55
GIL67	105	100	9	9	24.00	44.118	12.16
GIL68	105	88	3	3	24.00	72.973	5.36
GIL69	109	71	7	7	20.33	86.364	4.89
GIL70	112	124	8	8	26.67	41.606	13.86
GIL71	95	105	10	8	25.33	28.082	8.41
GIL72	105	100	6	4	24.33	60.784	6.63
GIL73	109	91	7	5	24.00	34.066	7.39
GIL74	111	73	4	3	22.33	32.500	6.38
GIL75	99	77	18	10	22.00	74.552	19.48
GIL76	104	87	4	4	24.67	96.441	9.06
GIL77	105	110	8	8	26.33	58.678	15.56
GIL78	99	75	8	7	24.33	60.481	12.59
GIL79	105	65	3	3	23.50	88.889	2.65
GIL80	98	78	5	5	19.33	88.235	6.04

GIL81	97	105	7	7	22.67	73.934	18.5
GIL82	98	67	9	6	22.33	68.182	3.5
GIL83	110	69	11	9	20.00	45.226	8.14
GIL84	97	84	7	7	22.00	88.235	11.2
GIL85	108	120	9	9	28.00	30.556	12.44
GIL86	97	105	5	5	27.67	73.913	9.34
GIL87	98	110	4	4	24.67	67.647	7.39
GIL88	108	84	3	3	22.33	77.143	4.91
GIL89	105	83	2	2	24.00	70.588	4.08
GIL90	105	97	2	2	22.00	62.791	4
GIL91	106	103	6	6	27.00	58.333	8.5
GIL92	107	100	7	7	27.00	44.509	16.68
GIL93	100	123	22	19	25.33	32.476	31.63
GIL94	105	64	4	3	18.67	50.704	5.06
GIL95	105	80	6	6	23.67	98.507	12.95
GIL96	105	73	6	5	22.33	94.077	13.92
GIL97	105	79	8	8	23.00	82.781	19.35
GIL98	98	105	3	3	22.67	88.235	7.41
GIL99	95	94	10	10	22.67	16.327	9.76
GIL100	99	75	9	8	21.67	78.114	13.09
GIL101	105	72	3	3	24.67	95.455	7.6
GIL102	93	128	11	11	25.00	62.132	26.08
GIL103	105	70	5	3	19.67	30.769	4.94
GIL104	105	100	4	3	24.67	50.392	6.7
GIL105	98	86	9	8	25.33	65.854	22.36
GIL106	94	105	9	9	24.67	47.619	13.63
GIL107	94	83	7	7	24.33	77.950	17.24
GIL108	98	110	5	5	24.67	82.143	12.51
GIL109	98	102	4	3	25.33	65.493	6.21
GIL110	105	91	13	10	26.67	89.130	37.29
GIL111	97	82	14	14	25.33	62.217	26.96
GIL112	98	100	15	13	26.67	30.493	20.55
GIL113	97	130	15	15	26.33	89.457	23.01
GIL114	104	74	6	5	21.67	78.599	9.92
GIL115	102	115	7	6	26.67	73.460	16.35
GIL116	97	105	9	9	26.33	76.804	16.73
GIL117	98	124	11	11	26.67	43.820	24.5
GIL118	100	123	7	7	26.67	58.209	11
GIL119	103	75	8	8	24.33	64.444	8.59
GIL120	105	100	3	3	21.00	49.239	3.79
GIL121	105	78	7	7	23.33	81.481	14.28
GIL122	121	69	14	14	19.00	80.000	14
GIL123	104	83	13	13	24.00	88.462	23.36
GIL124	102	112	7	6	24.33	96.774	16.8

GIL125	111	72	8	7	23.67	80.000	13.25
GIL126	99	81	8	8	25.00	66.667	14.72
GIL127	103	82	10	8	25.33	72.779	22.66
GIL128	103	75	9	8	22.67	57.971	15.48
GIL129	105	102	5	4	25.33	72.848	10.75
GIL130	109	80	11	10	23.67	71.795	18.99
GIL131	99	79	10	10	21.67	80.000	19.66
GIL132	105	76	4	3	24.67	84.536	7.91
GIL135	105	102	6	6	25.33	66.667	2.51
GIL136	115	80	10	8	24.00	11.340	3.06
GIL138	115	105	16	15	23.67	11.500	3
GIL139	105	120	11	11	25.67	11.348	2.62
GIL140	103	124	10	10	26.67	24.908	13.15
GIL141	103	115	8	7	23.67	15.116	5.35
GIL142	104	74	13	13	22.33	14.419	3.56
GIL143	104	80	11	11	23.33	12.181	2.57
GIL144	102	115	13	13	23.00	16.201	6.05
GIL145	107	87	5	4	22.00	39.394	4.51
GIL146	106	95	11	11	26.33	40.385	14.5
GIL147	100	89	8	8	21.67	6.542	2.07
GIL148	108	68	10	10	23.67	33.555	5.39
GIL149	115	78	7	5	23.33	5.983	1.54
GIL150	115	77	23	18	23.67	29.329	9.81
IR64	106	77	12	12	25.00	100.000	15.8
IRGC15808	96	105	15	15	24.20	100.000	10
7							

Supplemental Table S3: Phenotypic data of BC1F2:3 population for yield and yield attributing traits

Genotype	Days to 50% Flowering	Plant Height	Tiller Number	Productive Tillers	Panicle Length	Spikelet Fertility	Grain yield per plant
GIL1	112.0	70.90	13.33	12.33	18.67	97.45	17.78
GIL2	105.0	77.50	11.33	10.00	21.50	45.51	6.42
GIL3	110.0	72.77	15.33	14.00	20.83	60.12	8.04
GIL4	104.0	67.83	13.67	11.67	19.60	17.27	5.57
GIL5	111.0	78.17	12.00	10.33	22.67	62.96	5.89
GIL6	110.0	81.50	7.33	6.33	21.33	66.29	8.85
GIL7	112.0	89.33	16.67	13.33	22.33	45.16	9.08
GIL8	107.0	78.00	13.00	10.50	21.50	92.59	4.53
GIL9	106.0	86.17	14.00	12.00	20.33	46.58	7.46
GIL10	108.0	68.00	15.00	13.50	18.25	41.67	5.23
GIL11	108.0	78.20	10.67	7.33	18.37	25.93	4.95
GIL12	110.0	75.67	10.33	9.33	19.17	72.89	12.92
GIL13	109.0	80.17	9.67	7.67	19.83	47.01	7.46
GIL14	NA	NA	NA	NA	NA	NA	NA
GIL15	97.0	93.67	11.00	9.33	20.50	57.79	10.65
GIL16	107.0	108.33	10.33	8.33	24.50	84.76	10.55
GIL17	99.0	86.67	12.33	10.00	19.67	87.45	14.14
GIL18	107.0	84.67	10.67	10.33	21.00	87.25	18.69
GIL19	111.0	91.33	10.67	8.67	22.83	75.00	11.50
GIL20	114.0	89.67	9.33	9.00	20.67	78.49	11.97
GIL21	112.0	91.00	8.67	8.33	21.00	83.33	17.48
GIL22	100.0	101.33	10.00	7.67	21.17	70.00	5.30
GIL23	104.0	113.33	8.33	7.00	27.33	76.68	6.78
GIL24	110.0	89.83	8.33	7.00	23.00	86.09	19.06
GIL25	112.0	96.83	11.67	9.67	21.83	70.34	15.95
GIL26	97.0	98.00	11.67	9.67	23.50	75.51	18.63
GIL27	107.0	91.00	11.67	9.33	22.33	88.12	12.16
GIL28	109.0	133.67	9.33	8.67	24.33	74.07	16.23
GIL29	110.0	94.67	10.67	10.00	23.17	67.74	16.80
GIL30	99.0	136.00	12.00	10.00	22.00	68.68	16.84
GIL31	97.0	120.00	14.00	12.00	24.00	93.20	40.00
GIL32	106.0	116.67	11.67	10.33	26.67	87.05	17.88
GIL33	99.0	85.00	10.67	10.67	26.33	83.44	39.30
GIL34	98.0	120.00	15.00	13.00	26.20	95.00	38.00
GIL35	97.0	94.67	10.33	10.33	27.33	84.50	33.37
GIL36	102.0	85.00	14.00	13.00	25.00	90.00	35.20
GIL37	99.0	113.33	13.67	13.00	26.00	90.91	11.82
GIL38	100.0	100.00	10.00	9.00	23.00	85.00	5.47
GIL39	97.0	103.33	11.00	11.00	23.17	92.11	21.67
GIL40	100.0	71.50	8.00	8.00	20.50	86.36	5.60

GIL41	106.0	129.33	10.00	8.67	22.67	64.34	10.67
GIL42	106.0	127.00	8.67	7.33	25.33	57.66	15.32
GIL43	109.0	100.50	8.00	7.50	24.40	84.31	12.50
GIL44	105.0	82.67	11.33	9.67	20.00	89.19	7.82
GIL45	107.0	109.33	6.00	6.00	25.50	92.59	13.07
GIL46	109.0	70.00	8.33	7.33	21.00	86.67	7.81
GIL47	96.0	93.33	9.33	8.00	23.33	87.32	14.97
GIL48	97.0	110.33	9.00	8.33	24.83	83.06	14.88
GIL49	109.0	80.67	10.67	9.00	21.50	66.67	6.98
GIL50	97.0	84.33	9.00	8.33	21.50	76.92	10.49
GIL51	99.0	120.33	6.33	5.67	24.17	51.52	10.29
GIL52	109.0	111.33	10.33	9.67	23.83	83.33	15.84
GIL53	105.0	102.33	5.67	5.67	21.67	94.39	12.36
GIL54	113.0	77.67	10.33	10.00	24.17	91.27	16.94
GIL55	107.0	109.33	9.33	7.67	26.50	53.91	7.53
GIL56	109.0	70.33	11.67	8.00	19.33	81.72	6.47
GIL57	97.0	76.67	7.33	6.67	19.83	96.03	9.17
GIL58	107.0	76.00	7.00	6.33	21.00	70.78	8.74
GIL59	109.0	98.67	11.00	8.67	22.00	82.50	8.37
GIL60	112.0	101.00	6.67	6.67	24.33	94.74	11.56
GIL61	109.0	96.33	5.33	5.33	24.67	75.36	9.52
GIL62	114.0	74.00	6.00	6.00	20.00	93.33	10.80
GIL63	114.0	77.00	7.00	6.67	20.17	92.62	10.62
GIL64	105.0	87.00	6.00	6.00	20.33	60.14	8.59
GIL65	112.0	105.00	7.00	7.00	23.50	84.74	8.69
GIL66	97.0	88.00	10.00	8.00	23.50	65.50	6.64
GIL67	89.0	93.00	7.33	7.33	22.00	66.67	12.77
GIL68	113.0	100.67	9.67	8.33	24.00	81.90	14.20
GIL69	113.0	90.00	7.33	6.00	20.83	83.33	7.43
GIL70	114.0	105.33	7.67	7.00	23.00	68.32	12.68
GIL71	109.0	97.33	8.33	6.67	22.00	48.39	10.90
GIL72	106.0	95.33	6.67	6.33	21.67	60.00	5.48
GIL73	110.0	107.00	6.67	6.00	24.50	60.61	6.45
GIL74	115.0	75.00	9.67	9.67	21.33	92.59	14.06
GIL75	113.0	68.67	9.00	8.00	17.67	75.59	12.35
GIL76	110.0	69.33	8.67	8.67	19.17	95.45	14.17
GIL77	112.0	116.67	8.33	7.00	24.50	76.92	8.96
GIL78	109.0	113.33	8.67	6.67	21.67	82.50	11.79
GIL79	112.0	70.33	6.00	5.00	19.50	92.21	9.52
GIL80	113.0	83.00	7.00	6.67	19.50	91.30	13.29
GIL81	114.0	93.67	8.33	7.67	20.67	96.21	11.47
GIL82	102.0	81.00	5.00	4.00	18.50	80.77	7.55
GIL83	107.0	92.00	9.33	8.33	23.83	68.75	8.25
GIL84	113.0	76.50	7.00	6.67	20.67	90.68	7.94
GIL85	114.0	108.33	7.33	6.00	28.33	59.38	7.10
GIL86	113.0	98.33	9.33	8.33	23.67	85.15	15.33

GIL87	104.0	103.33	7.00	6.67	23.00	73.30	9.02
GIL88	114.0	100.33	5.33	5.33	27.00	89.80	9.65
GIL89	109.0	96.00	6.67	6.00	21.67	85.00	9.75
GIL90	99.0	101.67	5.67	5.67	24.67	81.08	9.73
GIL91	112.0	113.33	5.67	5.67	23.33	91.30	10.62
GIL92	99.0	104.00	7.33	6.33	25.33	83.72	8.18
GIL93	109.0	110.00	5.00	5.00	24.67	87.72	10.27
GIL94	107.0	74.33	6.00	6.00	20.17	72.22	6.62
GIL95	104.0	85.00	8.00	7.00	23.20	98.00	15.50
GIL96	109.0	79.67	7.33	7.33	20.67	98.04	13.00
GIL97	104.0	86.20	10.00	8.00	25.00	97.00	20.20
GIL98	107.0	101.67	5.67	5.33	22.67	96.47	11.62
GIL99	104.0	91.67	8.67	8.00	19.00	50.20	8.42
GIL100	113.0	76.00	8.00	7.67	21.33	94.44	12.21
GIL101	114.0	77.33	7.00	7.00	22.00	96.26	11.15
GIL102	108.0	111.67	8.00	7.33	24.00	73.08	8.92
GIL103	106.0	108.33	8.67	7.33	23.00	76.03	7.48
GIL104	109.0	106.33	6.00	5.33	24.00	75.44	8.71
GIL105	97.0	78.67	10.00	8.67	21.00	84.33	8.23
GIL106	97.0	103.33	10.00	7.67	23.67	83.33	8.21
GIL107	109.0	86.00	8.67	8.00	22.33	77.27	11.42
GIL108	109.0	118.00	7.00	7.00	25.67	82.42	9.78
GIL109	107.0	111.67	8.67	7.33	23.33	58.97	7.24
GIL110	111.0	90.33	8.00	7.67	21.33	65.20	12.42
GIL111	107.0	87.67	8.33	7.67	21.67	76.92	8.77
GIL112	111.0	87.67	8.33	6.67	21.00	73.68	6.81
GIL113	111.0	123.33	7.00	6.67	24.00	94.02	11.59
GIL114	110.0	86.67	6.67	6.67	22.33	75.81	9.92
GIL115	112.0	103.67	7.00	7.00	23.33	84.31	9.94
GIL116	107.0	111.67	7.67	7.33	22.33	73.76	9.87
GIL117	99.0	118.33	7.33	7.00	24.00	84.76	8.88
GIL118	109.0	101.33	8.00	8.00	22.67	83.33	10.72
GIL119	101.0	89.33	7.67	7.33	23.33	38.36	10.54
GIL120	102.0	98.50	7.50	4.50	24.00	85.91	10.36
GIL121	109.0	86.67	7.33	6.33	22.00	90.83	7.44
GIL122	112.0	85.00	14.00	14.00	20.00	85.00	8.00
GIL123	112.0	89.33	8.33	7.67	21.67	75.00	8.01
GIL124	109.0	94.67	7.33	6.33	22.67	80.34	8.88
GIL125	109.0	85.00	8.20	7.00	24.00	84.00	9.00
GIL126	104.0	83.67	11.00	10.00	22.67	83.33	10.76
GIL127	107.0	86.00	7.00	6.67	24.33	80.56	10.26
GIL128	109.0	93.00	7.33	6.67	22.00	78.38	7.67
GIL129	99.0	120.00	6.67	6.67	25.67	80.50	11.31
GIL130	109.0	94.67	7.67	7.33	23.00	81.48	10.12
GIL131	114.0	85.00	6.00	6.00	24.67	72.00	7.15
GIL132	112.0	71.67	9.00	9.00	19.67	77.87	10.46

GIL135	106.0	110.00	7.00	7.00	24.67	82.76	10.91
GIL136	113.0	85.00	10.00	9.00	24.20	72.50	7.91
GIL138	117.0	113.33	7.67	7.67	24.67	28.57	6.83
GIL139	107.0	93.00	7.00	6.67	24.33	78.26	8.17
GIL140	110.0	96.00	6.00	6.00	21.33	95.77	9.47
GIL141	110.0	103.33	5.33	5.33	22.67	69.23	3.80
GIL142	109.0	105.10	6.00	5.00	23.20	70.59	4.07
GIL143	109.0	105.00	5.50	8.00	24.50	41.22	6.17
GIL144	113.0	107.00	7.00	6.00	24.20	50.50	6.20
GIL145	107.0	88.00	7.67	6.67	21.67	55.32	3.91
GIL146	111.0	76.67	7.33	6.67	21.33	70.20	7.40
GIL147	109.0	90.50	5.50	5.00	22.00	71.70	5.01
GIL148	120.0	75.67	8.33	8.33	22.00	77.38	13.12
GIL149	109.0	95.67	7.00	6.33	26.00	70.59	5.26
GIL150	106.0	105.00	5.00	5.00	23.33	85.19	6.60
