

**Appendix A Positional variations in percentage of grain number to total grains (PGN), filled grain rate (FGR), grain weight (GW), rate of white-belly rice kernel (WBRK), white-core rice kernel (WCRK), and total chalky grain rate (CGR) for six mutants of compact panicle type**

<i>Mutant</i>	<i>Grain position</i>	<i>PGN (%)</i>	<i>FGR (%)</i>	<i>GW (mg)</i>	<i>WCRK (%)</i>	<i>WBRK (%)</i>	<i>CGR (%)</i>	<i>WCRK/WBRK</i>
CP1	UPB	22.17	98.89	22.68	5.00	52.00	57.00	0.10
	USB	6.65	100.00	22.02	2.35	38.24	40.59	0.06
	MPB	23.40	95.79	20.94	1.00	45.00	46.00	0.02
	MSB	21.18	89.53	20.27	0.50	28.00	28.50	0.02
	LPB	21.92	95.51	21.89	3.00	26.00	29.00	0.12
	LSB	4.68	100.00	19.61	1.50	2.50	4.00	0.60
	Mean			96.62	21.23	2.23	31.96	34.18
CP2	UPB	19.82	97.32	22.42	16.00	20.00	36.00	0.80
	USB	9.03	96.08	21.39	3.00	10.50	13.50	0.29
	MPB	22.65	97.66	22.54	6.50	16.50	23.00	0.39
	MSB	20.00	90.27	20.87	1.50	8.00	9.50	0.19
	LPB	20.35	94.78	22.70	3.00	7.50	10.50	0.40
	LSB	8.14	95.65	20.73	0.67	3.33	4.00	0.20
	Mean			95.29	21.77	5.11	10.97	16.08
CP3	UPB	16.60	97.73	25.73	39.50	31.50	71.00	1.25
	USB	12.08	96.88	24.14	2.50	19.00	21.50	0.13
	MPB	18.30	97.94	25.74	14.00	28.50	42.50	0.49
	MSB	23.77	96.03	23.37	1.50	9.00	10.50	0.17
	LPB	16.04	96.47	25.97	2.50	22.00	24.50	0.11
	LSB	13.21	94.29	23.30	1.50	12.00	13.50	0.13
	Mean			96.55	24.71	10.25	20.33	30.58
CP4	UPB	19.23	98.07	27.05	31.50	38.50	70.00	0.82
	USB	12.62	94.71	25.22	9.50	39.50	49.00	0.24
	MPB	18.63	96.81	26.62	31.50	32.00	63.50	0.98
	MSB	22.79	96.42	26.11	11.50	22.50	34.00	0.51
	LPB	17.07	98.26	26.16	19.50	33.00	52.50	0.59
	LSB	9.65	93.08	23.28	5.00	18.50	23.50	0.27
	Mean			96.22	25.74	18.08	30.67	48.75
CP5	UPB	17.17	92.09	24.38	7.00	38.50	45.50	0.18
	USB	13.74	85.47	22.49	2.00	12.50	14.50	0.16
	MPB	18.93	94.94	24.37	4.50	29.00	33.50	0.16
	MSB	21.49	88.48	22.33	0	9.50	9.50	0
	LPB	17.41	96.33	24.54	1.50	17.00	18.50	0.09
	LSB	11.26	89.36	21.98	0	3.00	3.00	0
	Mean			91.11	23.35	2.50	18.25	20.75
CP6	UPB	18.35	96.15	25.46	1.50	13.00	14.50	0.12
	USB	10.59	94.44	22.99	0	9.00	9.00	0
	MPB	17.71	97.67	25.73	0	14.00	14.00	0
	MSB	24.94	97.17	22.92	0.50	11.00	11.50	0.05
	LPB	16.53	99.29	26.01	1.50	15.50	17.00	0.10
	LSB	11.88	97.52	22.88	0	4.00	4.00	0
	Mean			97.04	24.33	0.58	11.08	11.67

**Appendix B Positional variations in percentage of grain number to total grains, filled grain rate, grain weight, rate of white-belly rice kernel, white-core rice kernel, and total chalky grain rate for six mutants of intermediate panicle type**

<i>Mutant</i>	<i>Grain position</i>	<i>PGN (%)</i>	<i>FGR (%)</i>	<i>GW (mg)</i>	<i>WCRK (%)</i>	<i>WBRK (%)</i>	<i>CGR (%)</i>	<i>WCRK/WBRK</i>
IP1	UPB	20.65	96.40	25.05	39.00	13.00	52.00	3.00
	USB	8.62	96.55	23.65	7.50	7.50	15.00	1.00
	MPB	20.65	94.96	25.00	19.50	14.50	34.00	1.34
	MSB	20.05	94.07	23.30	5.50	6.50	12.00	0.85
	LPB	20.20	98.53	24.95	9.00	15.00	24.00	0.60
	LSB	9.80	90.91	22.60	3.00	4.50	7.50	0.67
	Mean			95.24	24.09	13.92	10.17	24.08
IP2	UPB	18.78	96.75	23.40	9.50	16.00	25.50	0.59
	USB	10.84	100.00	22.30	1.50	5.00	6.50	0.30
	MPB	19.54	98.44	23.90	0.50	13.00	13.50	0.04
	MSB	18.93	99.19	21.85	2.50	7.00	9.50	0.36
	LPB	21.06	96.38	23.55	2.50	7.00	9.50	0.36
	LSB	10.84	95.77	21.45	1.00	4.00	5.00	0.25
	Mean			97.76	22.74	2.92	8.67	11.58
IP3	UPB	20.29	94.62	25.45	1.50	30.00	31.50	0.05
	USB	10.61	92.65	23.80	2.00	30.00	32.00	0.07
	MPB	18.88	95.04	25.25	1.00	46.00	47.00	0.02
	MSB	19.51	95.20	23.35	0.50	26.00	26.50	0.02
	LPB	20.29	96.92	25.25	0.50	40.50	41.00	0.01
	LSB	10.46	95.52	22.50	0.50	18.50	19.00	0.03
	Mean			94.99	24.27	1.00	31.83	32.83
IP4	UPB	19.56	98.26	24.53	44.50	28.00	72.50	1.59
	USB	10.20	93.33	23.18	41.50	31.50	73.00	1.32
	MPB	21.26	98.40	24.14	30.00	25.00	55.00	1.20
	MSB	23.13	94.12	22.81	19.00	21.50	40.50	0.88
	LPB	17.01	93.00	24.51	33.50	16.50	50.00	2.03
	LSB	8.84	86.54	22.15	6.79	14.20	20.99	0.48
	Mean			93.94	23.55	29.22	22.78	52.00
IP5	UPB	17.21	96.72	24.98	32.50	23.50	56.00	1.38
	USB	17.35	99.19	23.33	13.50	17.00	30.50	0.79
	MPB	18.62	98.48	25.88	20.00	19.00	39.00	1.05
	MSB	23.41	98.80	22.64	1.50	15.50	17.00	0.10
	LPB	16.64	97.46	24.62	9.00	13.50	22.50	0.67
	LSB	6.77	97.92	22.16	2.60	5.73	8.33	0.45
	Mean			98.09	23.93	13.18	15.70	28.89
IP6	UPB	20.30	98.15	22.91	17.00	14.50	31.50	1.17
	USB	11.09	98.31	22.56	9.00	4.00	13.00	2.25
	MPB	19.17	97.06	23.70	11.50	13.50	25.00	0.85
	MSB	22.37	97.48	22.17	1.50	9.50	11.00	0.16
	LPB	19.55	99.04	23.41	1.00	9.00	10.00	0.11
	LSB	7.52	97.50	21.32	0.50	3.00	3.50	0.17
	Mean			97.92	22.68	6.75	8.92	15.67

**Appendix C Positional variations in percentage of grain number to total grains, filled grain rate, grain weight, rate of white-belly rice kernel, white-core rice kernel, and total chalky grain rate for six mutants of loose panicle type**

<i>Mutant</i>	<i>Grain position</i>	<i>PGN (%)</i>	<i>FGR (%)</i>	<i>GW (mg)</i>	<i>WCRK (%)</i>	<i>WBRK (%)</i>	<i>CGR (%)</i>	<i>WCRK/WBRK</i>
LP1	UPB	15.21	94.67	24.30	12.00	26.50	38.50	0.45
	USB	21.70	93.46	21.84	2.50	10.00	12.50	0.25
	MPB	14.40	98.59	23.57	6.50	26.50	33.00	0.25
	MSB	24.54	93.39	21.97	3.50	15.50	19.00	0.23
	LPB	15.01	97.30	24.36	7.50	23.00	30.50	0.33
	LSB	9.13	95.56	22.38	1.50	22.00	23.50	0.07
	Mean			95.49	23.07	5.58	20.58	26.17
LP2	UPB	18.82	91.18	20.50	1.00	15.00	16.00	0.07
	USB	11.99	92.31	18.46	1.50	3.00	4.50	0.50
	MPB	20.30	96.36	20.00	0.50	8.00	8.50	0.06
	MSB	26.38	92.31	17.08	0.50	4.00	4.50	0.13
	LPB	16.61	94.44	19.31	0	2.00	2.00	0
	LSB	5.90	87.50	16.46	0	1.50	1.50	0
	Mean			92.35	18.63	0.58	5.58	6.17
LP3	UPB	17.55	94.97	30.75	53.00	43.50	96.50	1.22
	USB	6.07	96.36	29.32	29.49	57.05	86.54	0.52
	MPB	17.99	96.32	31.83	36.50	57.00	93.50	0.64
	MSB	25.06	84.58	29.21	33.50	49.00	82.50	0.68
	LPB	17.88	91.98	31.65	24.00	66.00	90.00	0.36
	LSB	15.45	84.29	29.19	21.50	49.00	70.50	0.44
	Mean			91.42	30.32	33.00	53.59	86.59
LP4	UPB	15.91	96.19	25.12	39.00	14.50	53.50	2.69
	USB	11.21	93.24	23.38	12.00	11.00	23.00	1.09
	MPB	19.85	97.71	24.96	19.00	18.50	37.50	1.03
	MSB	20.61	97.79	23.05	2.50	7.00	9.50	0.36
	LPB	20.30	96.27	25.17	8.50	21.00	29.50	0.40
	LSB	12.12	95.00	22.58	2.00	8.00	10.00	0.25
	Mean			96.03	24.04	13.83	13.33	27.17
LP5	UPB	17.11	97.52	25.39	54.50	25.00	79.50	2.18
	USB	8.35	96.61	23.85	8.50	16.50	25.00	0.52
	MPB	18.39	96.92	24.87	28.00	21.00	49.00	1.33
	MSB	22.21	94.27	23.44	6.50	14.00	20.50	0.46
	LPB	18.39	94.62	25.28	10.00	25.50	35.50	0.39
	LSB	15.56	96.36	22.77	1.50	8.50	10.00	0.18
	Mean			96.05	24.27	18.17	18.42	36.58
LP6	UPB	20.15	98.99	25.18	35.50	17.00	52.50	2.09
	USB	9.98	83.67	23.18	18.50	10.00	28.50	1.85
	MPB	20.36	94.00	25.54	32.00	18.00	50.00	1.78
	MSB	20.97	90.29	22.80	2.00	7.50	9.50	0.27
	LPB	19.75	94.85	25.16	6.00	15.00	21.00	0.40
	LSB	8.75	95.35	22.55	3.50	7.50	11.00	0.47
	Mean			92.86	24.07	16.25	12.50	28.75

**Appendix D Positional variations in percentage of grain number to total grains, filled grain rate, grain weight, rate of white-belly rice kernel, white-core rice kernel, and total chalky grain rate for six mutants of chicken feet type**

<i>Mutant</i>	<i>Grain position</i>	<i>PGN (%)</i>	<i>FGR (%)</i>	<i>GW (mg)</i>	<i>WCRK (%)</i>	<i>WBRK (%)</i>	<i>CGR (%)</i>	<i>WCRK/WBRK</i>
CFP1	UPB	13.30	100.00	24.30	18.50	25.50	44.00	0.73
	USB	25.32	95.68	21.83	7.00	22.50	29.50	0.31
	MPB	13.11	95.83	24.28	20.50	31.50	52.00	0.65
	MSB	24.77	96.32	22.78	4.50	24.50	29.00	0.18
	LPB	11.84	95.38	24.23	8.50	36.50	45.00	0.23
	LSB	11.66	95.31	21.62	1.00	13.50	14.50	0.07
	Mean			96.42	23.17	10.00	25.67	35.67
CFP2	UPB	12.33	97.26	24.33	43.00	13.00	56.00	3.31
	USB	24.32	97.22	22.22	11.50	20.00	31.50	0.58
	MPB	11.99	95.77	24.46	24.50	16.00	40.50	1.53
	MSB	28.89	97.66	21.80	4.00	16.00	20.00	0.25
	LPB	10.47	95.16	24.62	10.00	35.00	45.00	0.29
	LSB	11.99	94.37	21.49	1.50	12.00	13.50	0.13
	Mean			96.24	23.15	15.75	18.67	34.42
CFP3	UPB	14.36	98.78	24.79	27.50	20.50	48.00	1.34
	USB	23.29	95.49	22.71	3.50	12.50	16.00	0.28
	MPB	12.26	98.57	25.21	10.50	29.00	39.50	0.36
	MSB	25.39	97.24	22.13	1.00	11.00	12.00	0.09
	LPB	12.26	100.00	24.85	1.50	28.00	29.50	0.05
	LSB	12.43	95.77	21.60	0	6.50	6.50	0
	Mean			97.64	23.55	7.33	17.92	25.25
CFP4	UPB	12.41	98.86	24.65	1.50	30.00	31.50	0.05
	USB	23.83	97.04	22.75	2.00	30.00	32.00	0.07
	MPB	11.70	97.59	25.10	1.00	46.00	47.00	0.02
	MSB	22.70	93.79	22.35	0.50	26.00	26.50	0.02
	LPB	12.55	97.75	24.90	0.50	40.50	41.00	0.01
	LSB	16.78	94.12	22.25	0.50	18.50	19.00	0.03
	Mean			96.53	23.67	1.00	31.83	32.83
CFP5	UPB	13.94	97.92	24.75	22.50	16.50	39.00	1.36
	USB	24.83	91.81	22.80	6.00	16.50	22.50	0.36
	MPB	10.89	90.67	25.20	11.50	24.00	35.50	0.48
	MSB	20.18	94.96	22.45	2.00	9.50	11.50	0.21
	LPB	13.36	94.57	25.25	3.00	28.00	31.00	0.11
	LSB	16.84	91.38	22.35	0	6.50	6.50	0
	Mean			93.55	23.80	7.50	16.83	24.33
CFP6	UPB	11.61	97.33	23.50	14.00	27.50	41.50	0.51
	USB	23.52	99.34	21.95	4.00	17.00	21.00	0.24
	MPB	11.30	95.89	23.85	4.50	22.00	26.50	0.20
	MSB	26.31	96.47	21.60	1.00	8.00	9.00	0.13
	LPB	11.92	94.81	23.35	0	13.50	13.50	0
	LSB	15.32	96.97	21.25	0	6.50	6.50	0
	Mean			96.80	22.58	3.92	15.75	19.67