

Table S1. Amylose and protein concentration of diverse rice accessions grown in Texas A&M AgriLife Research at Beaumont in 2018 and 2019.

	ID	Amylose Concentration (%)		Protein Concentration (%)	
		2018	2019	2018	2019
1	119A/170R	26.23	19.58	5.46	6.81
2	119A/173R	24.70	20.65	5.52	7.62
3	119B	32.88	25.88	5.41	10.71
4	152R	15.06	11.68	5.75	7.97
5	153R	14.96	7.13	5.98	9.04
6	163R	14.59	12.04	6.40	8.63
7	164R	-	23.51	-	9.01
8	170R	14.20	9.71	6.02	8.36
9	171R	16.65	12.57	6.52	7.65
10	172R	12.18	8.06	5.41	8.15
11	173R	15.44	11.90	6.31	8.45
12	329A/170R	25.47	19.31	5.66	8.15
13	329A/173R	22.76	21.14	6.21	8.60
14	329B	-	18.69	-	10.62
15	339A/170R	25.89	20.70	4.32	7.56
16	339A/173R	27.13	20.03	5.55	8.69
17	339B	31.44	22.66	7.41	11.81
18	435A/173R	25.99	20.43	5.44	7.50
19	435A/173R	-	18.51	-	8.15
20	435B	32.03	24.18	6.52	9.43
21	56-122-23	17.02	15.47	5.14	6.07
22	89-Y-235	19.57	18.20	6.31	6.99
23	A 152	15.86	14.18	5.53	7.79
24	Agostano	18.32	16.77	5.33	7.38
25	Ai Yeh Lu	17.75	16.81	5.40	7.53
26	Antonio	23.88	22.35	6.60	7.44
27	Ardito	15.10	13.46	6.11	8.21
28	B6616A4-22-Bk-5-4	23.26	19.89	5.69	8.30
29	Baber	33.22	26.59	5.83	8.42
30	Bamoa A75	31.06	24.45	5.18	6.84
31	Bhim Dhan	24.87	17.62	5.75	6.75
32	Biser 1	16.22	13.82	5.06	6.81
33	Blue Rose Supreme	17.60	14.71	5.11	5.96
34	Blue Stick	22.54	20.34	5.45	5.76
35	Bombilla	15.45	13.55	5.64	7.50
36	Bombon	20.55	16.19	7.71	8.09
37	Botika S/R	28.79	23.29	6.63	7.65

	ID	Amylose Concentration (%)		Protein Concentration (%)	
		2018	2019	2018	2019
38	British Honduras Creole	23.76	18.02	6.01	7.26
39	Bul Zo	16.86	13.20	4.94	5.84
40	Buphopa	11.98	8.64	7.11	9.34
41	C 5560	2.81	-	7.02	-
42	C 8429	20.92	17.84	6.78	6.28
43	C4-63	22.79	11.23	8.15	8.51
44	C57-5043	24.12	-	5.47	-
45	Calmochi-101	4.65	1.99	5.26	5.96
46	Camponi SML	22.91	17.97	7.26	8.81
47	Celiaj	17.69	11.01	7.91	11.04
48	Cenit	17.65	13.69	6.20	7.76
49	Chacareiro Uruguay	11.30	9.40	6.14	7.29
50	Cheniere	32.17	26.59	5.91	7.56
51	Chia Nung Yu 242	30.60	24.40	7.08	7.20
52	Chunjiangzao No. 1	16.63	10.25	6.05	9.10
53	Cocodrie	32.22	23.91	6.28	6.99
54	Colorado	32.68	26.50	6.10	7.74
55	Coppocina	23.76	20.43	5.78	6.49
56	Criollo Chivacoa 2	19.71	17.71	6.75	7.68
57	Csornuj	16.22	12.48	9.61	10.62
58	Cybonnet	22.95	18.91	7.14	9.19
59	Cypress	23.21	17.71	6.37	8.57
60	Darmali	20.48	-	7.85	-
61	Della 2	23.82	17.04	6.22	6.93
62	Diamond	22.90	20.29	6.60	7.29
63	Early	24.89	16.59	6.00	8.90
64	Early Colusa	17.54	13.78	5.66	6.78
65	Early Wataribune	20.25	15.92	5.17	6.19
66	Edith	13.88	11.37	6.02	7.26
67	Edomen Scented	17.90	14.36	5.30	6.43
68	Egyptian Wild Type	22.64	-	5.86	-
69	El Paso L-144	30.41	22.57	5.86	8.27
70	Erythroceros Hokkaido	15.95	11.86	7.68	10.06
71	Ginmasari	13.37	10.70	6.01	7.82
72	Gogo Lempuk	20.40	16.32	7.02	8.18
73	GPNO 1106	26.34	17.57	4.92	7.11
74	Guatemala 1021	20.00	18.51	5.96	7.02
75	H57-3-1	15.05	13.11	5.24	7.29
76	Habiganj Boro 6	21.29	19.54	6.66	8.57

	ID	Amylose Concentration (%)		Protein Concentration (%)	
		2018	2019	2018	2019
77	Haginomae Mochi	0.78	1.72	5.36	5.85
78	Hatsunishiki	15.33	13.73	5.31	6.99
79	HB-6-2	11.84	11.59	7.17	7.68
80	IAC 25	19.26	17.21	6.18	8.27
81	IR 1321-12	12.33	12.39	6.06	7.11
82	IR24	11.39	10.43	6.43	7.65
83	IR-44595	29.44	24.18	5.49	9.10
84	IR64	19.31	15.83	5.46	7.71
85	IR64-Sub1	22.80	17.39	6.60	8.18
86	IR72	26.26	24.63	5.74	7.05
87	IRAT 177	13.02	13.91	5.80	6.75
88	IRAT 44	12.19	10.65	6.31	7.47
89	Italica Carolina	19.68	16.01	7.94	9.46
90	J.P. 5	12.77	12.93	5.62	5.81
91	Jefferson	18.93	17.26	6.16	7.53
92	Jouiku 393G	12.01	17.44	5.77	8.24
93	Kamenoo	13.69	13.29	5.33	7.11
94	Karabaschak	16.44	-	6.66	-
95	Karang Serang	16.36	16.28	7.68	7.59
96	Katy	21.30	20.34	6.90	6.72
97	Kaukkyi Ani	17.13	17.71	8.27	8.45
98	Kaybonnet	23.41	19.98	6.07	8.06
99	Khao Luang	3.86	-	6.28	-
100	Khao Phoi	3.88	5.83	7.71	7.53
101	Kiuki No. 46	13.42	15.21	5.24	6.78
102	Koshihikari	14.93	15.38	6.13	5.70
103	Krasnodarskij 3352	16.34	14.67	6.46	7.41
104	Krasnodarskij 424	17.28	15.07	5.81	6.93
105	L-201	18.15	17.30	5.99	7.76
106	L-202	26.06	23.46	5.22	8.93
107	L-203	29.20	26.05	5.47	8.12
108	LAC 23	21.54	19.76	5.79	7.11
109	Lacassine	21.30	21.10	6.66	7.02
110	Lady Wright Seln	11.78	12.84	5.28	7.14
111	LaGrue	19.72	20.16	6.46	6.93
112	LaKast	19.53	20.34	6.78	7.82
113	Leah	19.93	21.63	6.52	6.84
114	Lebonnet	17.95	20.16	5.36	7.68
115	Lemont	17.86	18.15	6.41	7.68

	ID	Amylose Concentration (%)		Protein Concentration (%)	
		2018	2019	2018	2019
116	LGRU 2	19.71	-	6.78	-
117	Ligerito	19.58	16.72	5.36	6.90
118	Lua Chua Chan	21.58	-	7.76	-
119	Luk Takhar	15.55	15.38	4.83	6.46
120	Lusitano	14.33	14.09	7.94	7.97
121	M-201	9.08	8.64	7.29	9.88
122	M-202	8.74	9.00	5.38	7.53
123	M-203	11.13	10.65	5.94	8.45
124	M-204	12.28	21.28	5.25	7.76
125	M-401	11.27	10.34	5.44	7.05
126	Mars	10.68	10.29	6.63	7.76
127	Mercury	10.15	10.25	6.34	7.65
128	Minghui 63	10.58	8.15	6.28	6.52
129	Mojito Colorado	19.37	16.81	6.81	6.49
130	Moroberekan	27.78	-	6.40	-
131	N22	25.92	21.63	6.34	10.71
132	Nanton No. 131	18.37	0.61	5.52	8.15
133	Newbonnet	20.18	17.53	6.10	8.06
134	Nipponbare	13.99	13.20	6.19	5.74
135	Niwahutaw Mochi	0.39	2.26	5.71	6.07
136	Nortai	14.01	11.28	5.53	6.81
137	Nova	13.81	10.96	6.22	6.96
138	Noventa Dias Blanco	21.62	18.29	5.77	6.22
139	NSF-TV 107	21.42	17.84	6.16	7.97
140	Oryzica Llanos 4	29.63	26.05	6.46	7.56
141	Oryzica Llanos 5	25.61	23.11	9.43	10.83
142	OS 6 (WC 10296)	20.53	18.69	5.72	6.84
143	Padi Pohon Batu	20.23	16.77	6.55	7.23
144	Palmyra	15.07	14.36	5.91	5.93
145	Panda	14.58	11.41	6.12	8.36
146	Pergonil 15	14.96	15.07	5.93	6.81
147	Presidio	21.53	19.63	5.68	7.23
148	Quinimpol	2.67	2.66	7.91	7.91
149	R 101	10.77	8.87	7.11	8.45
150	R 67	23.28	16.59	5.99	8.45
151	R 75	22.31	16.23	5.88	6.52
152	Ragasu	15.57	12.48	5.72	6.49
153	RD 218	15.29	11.10	6.69	7.11
154	Rex	20.67	17.66	5.58	6.19

	ID	Amylose Concentration (%)		Protein Concentration (%)	
		2018	2019	2018	2019
155	Rico 1	14.67	13.55	5.20	5.90
156	Romanica	19.06	15.52	7.68	8.87
157	Romeno	32.01	-	5.66	-
158	Romeo	13.99	13.51	5.77	7.65
159	Rondo	29.94	24.49	6.81	7.62
160	Roy J	23.08	17.93	5.64	6.90
161	RT 1031-69	29.76	24.58	7.02	9.19
162	RU-1003098	21.21	18.64	6.28	8.06
163	RU-1003123	31.56	24.94	7.32	7.35
164	RU-1303181	29.32	24.54	6.60	7.29
165	RU-1303184	23.29	14.98	6.84	8.95
166	RU-1403138	31.57	20.74	6.43	7.41
167	RU-1403141	22.06	16.50	6.42	7.76
168	RU-1403166	20.80	18.73	7.38	7.50
169	RU-1503110	11.53	7.97	7.85	10.20
170	RU-1503147	31.95	22.93	5.98	7.17
171	RU-1603126	22.32	16.32	6.01	8.63
172	RU-1603150	22.45	-	6.52	-
173	RU-903147	27.37	23.73	6.49	6.90
174	Saber	18.68	10.25	7.68	6.93
175	Sabine	29.36	24.22	6.37	6.93
176	Sathi	13.25	11.37	7.23	8.06
177	Saturn	11.16	10.92	6.43	8.72
178	Secano do Brazil	14.96	11.72	5.50	6.57
179	Sel. No. 388	11.87	10.16	5.30	5.95
180	Shimizu Mochi	1.59	0.87	5.65	7.26
181	Shinriki	15.23	15.07	5.41	5.08
182	Shirogane	14.08	17.39	5.89	8.81
183	Short Grain	29.93	24.22	7.76	9.40
184	Simpor	20.98	18.15	6.37	6.43
185	Sipirasikkam	20.77	20.29	6.16	5.57
186	Sml Kapuri	23.83	21.41	5.74	7.85
187	Somewake	17.24	13.78	5.92	7.59
188	Sri Malaysia Dua	17.76	13.15	6.39	7.47
189	Sultani	13.71	10.88	6.13	9.52
190	Sung Liao 2	15.10	10.74	5.80	6.90
191	Suweon	15.97	13.38	6.13	5.81
192	Ta Hung Ku	20.81	16.77	7.02	9.49
193	Taichu Mochi 59	23.10	17.53	6.69	7.79

	ID	Amylose Concentration (%)		Protein Concentration (%)	
		2018	2019	2018	2019
194	Tainan-Iku No. 512	17.32	15.03	6.13	5.65
195	Taipei 309	17.40	15.12	5.20	5.25
196	Takao No. 25	16.13	12.57	5.57	5.88
197	Takao-Iku No. 44	16.71	12.62	4.93	6.21
198	Takao-Iku No. 8	18.65	14.49	5.58	5.97
199	Tamanishiki	16.66	11.95	5.33	6.28
200	Terso	13.35	10.29	5.58	6.43
201	Thad	28.87	22.79	6.25	6.84
202	Tia Bura	24.82	19.76	6.57	7.02
203	Titan	13.62	11.68	5.86	7.17
204	Tokyo Shino Mochi	1.92	0.00	5.61	7.62
205	Tox 782-20-1	21.64	19.36	5.21	6.78
206	Upland	25.62	15.79	5.80	7.08
207	UZ ROSZ M38	27.78	22.17	8.63	8.81
208	Vary Tarva Osla	15.80	11.81	6.43	7.85
209	Very Early M9	13.13	9.36	4.94	7.68
210	WAB462-10-3-1	20.28	17.66	6.66	8.18
211	WC 2811	23.61	17.21	6.84	7.68
212	WC 3397	13.77	10.92	5.61	7.59
213	WC 3532	23.86	-	6.30	-
214	WC 4443	22.27	16.63	6.25	5.78
215	WC 6	4.79	0.70	6.04	7.14
216	Wells	24.75	18.60	6.13	7.05
217	WIR 3039	20.49	-	6.40	-
218	WW 8/2290	28.72	26.28	8.09	9.64
219	Yong Chal Byo	15.46	10.34	5.74	10.20
220	Zhenshan 2	29.90	22.35	6.60	9.91

Table S2. List of gene models located within 100 kilobase pairs of SNPs significantly associated with milled grain protein and apparent amylose concentrations from the 2018 and 2019 seasons.

Trait (Season)	SNP	Gene Model (within 100kbp)	Function (RAP-DB)
Protein concentration (2018)	S01_36225938	Os01g0811100	ubiquitin-dependent protein catabolic process, proteolysis involved in cellular protein catabolic process, endopeptidase activity, threonine-type endopeptidase activity
		Os01g0811300	DNA methylation reader, Response to salt stress , histone-lysine N-methyltransferase activity
		Os01g0812000	Transcriptional activator of gibberellin-dependent alpha-amylase expression, regulation of nutrient mobilization in germination
	S02_12644707	Os02g0317500	Cyclin-like F-box domain containing protein
		Os02g0317400	transport protein, longin-like domain containing protein
	S02_26708951	Os02g0644000	Proteolysis, cysteine-type endopeptidase activity
		Os02g0643200	Transcription factor, DNA-binding intermediate protein for SLR1, Modulation of gibberellin signaling pathway, Regulation of plant growth and development
		Os02g0643000	Structural molecule activity, Vesicle-associated membrane protein
		Os02g0642700	Lipopolysaccharide-modifying protein, CAP10-like family protein
	S04_28680892	Os04g0563000	GDP-fucose protein O-fucosyltransferase
		Os04g0562100	Amino acid transporter, transmembrane domain containing protein
		Os04g0561900	Peptidase S9A, prolyl oligopeptidase family protein; oxidation-reduction process
	S08_17703647	Os08g0374800	UDP-glucose epimerase, modulation of cellulose biosynthesis and wall assembly, Cell wall formation and photosynthesis, galactose metabolic process
		Os08g0376300	protein phosphorylation, protein serine/threonine kinase activity, protein binding, ATP binding, transferase activity, transferring phosphorus-containing groups, Similar to Leucine-rich receptor-like protein kinase
		Os08g0375400	Plant disease resistance response protein
	S10_7561107	Os10g0208600	Pollen Ole e 1 allergen/extensin domain containing protein
		Os10g0208200	GTP catabolic process, intracellular protein transport , signal transduction, Similar to ras-like

Trait (Season)	SNP	Gene Model (within 100kbp)	Function (RAP-DB)
	S10_10978682	Os10g0349400	lipid transport, Plant lipid transfer protein/seed storage/trypsin-alpha amylase inhibitor
		Os10g0350450	translation, structural constituent of ribosome, Similar to 40S ribosomal protein S23
	S10_21407969	Os10g0536100	MIKC-type MADS-box protein, Long day (LD)-specific negative regulator of flowering
		Os10g0536500	Peptidase S10, serine carboxypeptidase
		Os10g0537800	Peptidase aspartic, catalytic domain containing protein
	S10_21408016	Os10g0536100	MIKC-type MADS-box protein, Long day (LD)-specific negative regulator of flowering
		Os10g0536500	Peptidase S10, serine carboxypeptidase
		Os10g0536700	response to oxidative stress , oxidation-reduction process, peroxidase activity
		Os10g0537800	Peptidase aspartic, catalytic domain containing protein, proteolysis, aspartic-type endopeptidase activity
	S11_15568406	Os11g0425100	Peptidase C1A, papain family protein, cysteine-type peptidase activity
Protein concentration (2019)	S01_32198354	Os01g0729600	Pyridoxal phosphate-dependent transferase
		Os01g0730100	Cyclin-like F-box domain containing protein
		Os01g0730300	trehalose biosynthetic process
		Os01g0730900	DNA polymerase III, subunits gamma and tau domain containing protein, DNA replication, DNA-directed DNA polymerase activity
	S02_6959467	Os02g0224100	Protein phosphatase 2C domain containing protein
		Os02g0224200	Similar to Ser/Thr specific protein phosphatase 2A B regulatory subunit beta isoform, signal transduction, protein binding
	S02_14624561	Os02g0435000	Translocation protein Sec62 family protein, protein transporter activity
		Os02g0436400	NAD(P)-binding domain containing protein, lysine biosynthetic process via diaminopimelate, oxidation-reduction process
	S02_25383967	Os02g0617600	Protein phosphatase 2A, regulatory subunit PR55 domain containing protein
		Os02g0618200	Signal transduction response regulator
	S04_32077706	Os04g0621500	Disease resistance protein domain containing protein, defense response
	S04_32077761	Os04g0620700	Nucleolin-like protein, Salt stress response
	S04_32077827	Os04g0620400	SIT4 phosphatase-associated protein family

Trait (Season)	SNP	Gene Model (within 100kbp)	Function (RAP-DB)
	S04_27933097	Os04g0547600	Pathogenesis-related transcriptional factor and ERF domain containing protein
		Os04g0547900	Anti-sense to fibroblast growth factor protein GFG family protein
		Os04g0548300	Armadillo-type fold domain containing protein
		Os04g0548400	Protein kinase, core domain containing protein
	S04_17895938	Os04g0366000	protein serine/threonine kinase activity
	S05_27184717	Os05g0545200	Similar to zinc ion binding, protein binding
		Os05g0545000	Similar to Phosphatidylinositol transfer-like protein IV, transporter activity
	S06_31841867	Os06g0727200	response to oxidative stress , catalase activity
		Os06g0727300	Similar to glycosyltransferase
		Os06g0727400	Similar to Protein kinase APK1A, chloroplast precursor
	S07_23761720	Os07g0572100	Similar to Amine oxidase like protein, quinone binding, cellular amine metabolic process
		Os07g0572800	Similar to MAP kinase-like protein, protein serine/threonine kinase activity
	S07_25039822	Os07g0597200	Protein kinase, core domain containing protein, protein serine/threonine kinase activity
	S07_25039804	Os07g0597500	NAD(P)-binding domain containing protein, oxidation-reduction process
		Os07g0598100	Similar to Hydroxyproline-rich glycoprotein DZ- HRGP precursor, RNA methyltransferase activity
		Os07g0598300	DNA binding protein, DEAD-like helicase
	S07_27349671	Os07g0640200	Carbohydrate kinase , FGGY family protein, carbohydrate metabolic process
	S07_27345896	Os07g0642400	Similar to chromatin remodeling complex subunit, nucleic acid binding, hydrolase activity, acting on acid anhydrides, in phosphorus-containing anhydrides
	S08_15381100	Os08g0338900	Similar to enhancer of polycomb-like protein101
		Os08g0339200	hydrolase activity, acting on ester bonds
		Os09g0385700	Zinc finger, AN1-type domain containing protein
	S09_15114981	Os09g0407950	Similar to transducin family protein / WD-40 repeat family protein
		Os09g0407900	Peptidase C19, ubiquitin carboxyl-terminal hydrolase 2 family protein
		Os09g0407200	proteasomal ubiquitin-dependent protein catabolic process, damaged DNA binding

Trait (Season)	SNP	Gene Model (within 100kbp)	Function (RAP-DB)
	S09_23506233	Os09g0567400	Histidine phosphotransfer protein, Cytokinin signaling and stress response , signal transducer activity
		Os09g0567300	Monodehydroascorbate reductase, Tolerance to ROS-induced oxidative stress
		Os09g0566550	Similar to serine/threonine protein kinase 1, CTR1, protein serine/threonine kinase activity, protein phosphorylation
	S11_4473024	Os11g0187500	Similar to Heat shock protein 70
	S11_24669964	Os11g0591200	Similar to Beta-ketoacyl-CoA-synthase, fatty acid biosynthetic process
		Os11g0592100	defense response to bacterium, defense response to fungus , chitinase activity
	S12_26658863	Os12g0621500	protein phosphorylation, transferase activity, transferring phosphorus-containing groups
		Os12g0621000	ubiquitin-dependent protein catabolic process, Similar to Ubiquitin carboxyl-terminal hydrolase
		Os12g0621100	Similar to Filamentous flower-like yabby protein, DNA and protein binding
		Os12g0621300	Zinc finger, PMZ-type domain containing protein, zinc ion binding
		Os12g0621900	Similar to Mov34/MPN/PAD-1 family protein
Amylose concentration (2018)	S04_29329808	Os04g0571800	Zinc finger, RING/FYVE/PHD-type domain containing protein
		Os04g0572700	Similar to DNA-directed RNA polymerase, nucleic acid binding, zinc ion binding
		Os04g0573000	SPX-MFS protein, Phosphate transporter, Pi homeostasis, transmembrane transport
		Os04g0573200	Copper chaperone for superoxide dismutase, Target of miR398b, Resistance to rice blast disease, superoxide metabolic process
		Os04g0573300	proteolysis, serine-type endopeptidase activity
	S07_11216782	Os07g0288700	Similar to white-brown-complex ABC transporter family, nucleoside-triphosphatase activity, nucleotide binding
	S08_22987802	Os08g0465800	Similar to Glutamate decarboxylase, glutamate metabolic process, carboxylic acid metabolic process
Amylose Concentration (2019)	S01_253310	Os01g0104600	Homolog of Arabidopsis DE-ETIOLATED1 (DET1), Modulation of the ABA signaling pathway and ABA biosynthesis, Regulation of chlorophyll content
	S01_253309	Os01g0103900	Polynucleotidyl transferase, Ribonuclease H fold domain containing protein

Trait (Season)	SNP	Gene Model (within 100kbp)	Function (RAP-DB)
		Os01g0104000	C-type lectin domain containing protein, protein phosphorylation, protein kinase activity
		Os01g0104800	Sas10/Utp3 family protein, gene silencing
		Os01g0105400	Similar to Kinesin heavy chain
		Os01g0752200	Enoyl-CoA hydratase/isomerase, Regulation of grain number and the yield, 3-hydroxyisobutyryl-CoA hydrolase activity
	S09_9767891	Os09g0319800	Terpene synthase-like domain containing protein, Terpenoid cylases/protein prenyltransferase alpha-alpha toroid
	S10_10340782	Os10g0339400	IQ calmodulin-binding region domain containing protein
		Os10g0339600	Similar to Alpha-1,2-fucosidase, carbohydrate metabolic process, hydrolase activity, hydrolyzing O-glycosyl compounds
	S11_14759126	Os11g0414000	eIF4-gamma/eIF5/eIF2-epsilon domain containing protein, RNA metabolic process