



Figure S1. Trait correlations for brown rice traits and grain size traits in three environments. LS: Lingshui; YZ: Yangzhou; BRL: Brown rice length; BRW: Brown rice width; BLWR: Length-width ratio of brown rice; BRGW: Thousand grain weight of brown rice; GL: Grain length; GW: Grain width; LWR: Length-width ratio; TGW: Thousand grain weight; *, **, and *** showed the significant at the level of 5%, 1%, and 0.1%, respectively.

Table S1. Known grain size genes close to brown rice traits QTLs detected in this study.

QTLs	Marker	Chr.	Known gene	Gene ID	Reference
<i>qBLWR3-1</i>	SSR3-288	3	<i>qLGY3/OsLG3b</i>	Os03g0215400	[15,16]
<i>qBRL5-1, qBRP5</i>	SSR5-1	5	<i>GS5</i>	Os05g0158500	[27]
<i>qBTV6-4</i>	SSR6-248	6	<i>GW6a</i>	Os06g0650300	[29]
<i>qBLWR7-2, qBRT7, qBTV7</i>	SSR7-174	7	<i>GW7/GL7/SLG7</i>	Os07g0603300	[32–34]
<i>qBWC7-3</i>	STS7-5	7	<i>GLW7</i>	Os07g0505200	[35]