

**Table S1 Estimated genetic and residual variance components under different models sorted by model size for the yield component traits in rice.** This table gives the estimated genetic variance components under different models sorted by model size for the yield component traits obtained from the IMF2 population of rice. Six models were compared and the sizes of the six models range from one to six. The model labeled a is the additive model with only one additive variance component (model size is one). The model labeled a + d is the main effect model with additive and dominance variance components (model size is two). Other models are defined in the same way. The estimated genetic variance components are arranged in lower triangular of a square table for each trait because a particular type of variance component is only available from a model that includes this type of genetic variance.

Trait	Model	a	d	aa	dd	ad	da	Residual
Yield	a	14.4911						23.3308
	a+d	13.1129	9.0443					19.2088
	a+d+aa	11.2609	7.73516	7.38906				14.0566
	a+d+aa+dd	10.7365	0.00001	7.80710	7.23373			12.2930
	a+d+aa+dd+ad	4.32190	0.00001	7.27218	5.442035	16.7565		4.90684
	a+d+aa+dd+ad+da	0.00001	0.00001	7.00964	5.271305	18.2771	5.54845	1.96303
Tiller	a	1.38792						1.39981
	a+d	1.38792	0.00001					1.39981
	a+d+aa	1.05890	0.00001	0.61650				0.97550
	a+d+aa+dd	1.05895	0.00001	0.61645	0.00001			0.97549
	a+d+aa+dd+ad	1.05896	0.00001	0.61650	0.00001	0.00001		0.97545
	a+d+aa+dd+ad+da	0.44516	0.00001	0.58511	0.00001	0.12044	1.13048	0.37376
Grain	a	254.636						124.165
	a+d	245.599	24.3225					113.847
	a+d+aa	193.179	14.9761	69.4831				74.4618
	a+d+aa+dd	192.990	0.00001	68.5104	17.41830			69.7084
	a+d+aa+dd+ad	150.877	0.00001	66.8473	6.55935	110.184		21.5337
	a+d+aa+dd+ad+da	150.913	0.00001	66.8373	6.579376	110.180	0.00001	21.5147
KGW	a	2.82000						0.54720
	a+d	2.69618	0.26283					0.43694
	a+d+aa	2.38064	0.21624	0.32088				0.25818
	a+d+aa+dd	2.34714	0.00001	0.32697	0.245812			0.18642
	a+d+aa+dd+ad	2.34717	0.00001	0.32699	0.245813	0.00001		0.18641
	a+d+aa+dd+ad+da	2.26561	0.00001	0.31201	0.227324	0.00001	0.18803	0.11309