

1 Supplementary material

- 2 **Table S1.** Standard errors (SE) for the average Pearson's correlation (APC) for each environment in each of the 9 data sets. I denotes
3 with and WI denotes without the G× E interaction term.

Env	Method	Interaction	Maize 1	Maize 2	Maize 3	Wheat 4	Wheat 5	Wheat 6	Wheat 7	Wheat 8	Wheat 9
Env1	GBLUP	I	0.040	0.030	0.058	0.008	0.015	0.014	0.021	0.011	0.008
Env2	GBLUP	I	0.042	0.036	0.031	0.015	0.024	0.019	0.019	0.012	0.008
Env3	GBLUP	I	0.044	0.032	0.023	0.019	0.015	0.007	0.022	0.016	-
Env4	GBLUP	I	-	-	-	0.011	0.015	0.014	-	-	-
Env5	GBLUP	I	-	-	-	-	-	0.013	-	-	-
Env1	DL	I	0.036	0.036	0.037	0.016	0.017	0.017	0.034	0.030	0.005
Env2	DL	I	0.040	0.028	0.033	0.013	0.033	0.013	0.021	0.010	0.016
Env3	DL	I	0.083	0.066	0.028	0.021	0.027	0.013	0.025	0.016	-
Env4	DL	I	-	-	-	0.036	0.024	0.030	-	-	-
Env5	DL	I	-	-	-	-	-	0.031	-	-	-
Env1	GBLUP	WI	0.048	0.038	0.073	0.010	0.010	0.035	0.049	0.010	0.007
Env2	GBLUP	WI	0.079	0.042	0.066	0.017	0.026	0.050	0.013	0.011	0.015
Env3	GBLUP	WI	0.044	0.036	0.028	0.014	0.024	0.032	0.020	0.016	-
Env4	GBLUP	WI	-	-	-	0.016	0.020	0.022	-	-	-
Env5	GBLUP	WI	-	-	-	-	-	0.033	-	-	-
Env1	DL	WI	0.029	0.028	0.040	0.018	0.018	0.021	0.052	0.020	0.015
Env2	DL	WI	0.039	0.032	0.039	0.019	0.024	0.028	0.030	0.008	0.017
Env3	DL	WI	0.063	0.041	0.036	0.028	0.018	0.010	0.025	0.009	-
Env4	DL	WI	-	-	-	0.019	0.020	0.038	-	-	-
Env5	DL	WI	-	-	-	-	-	0.030	-	-	-