

Supplementary Table S1. Variable discard process depending on a $VIF \geq 5$ criterion for hatchability and external characterization-related traits of eggs in the studied breeds.

Statistic	Tolerance	VIF	Statistic	Tolerance	VIF	Statistic	Tolerance	VIF
Major diameter	0.0058	173.2366	Embryonic mortality 2	0.0421	23.7337	Embryonic mortality	0.0341	29.3029
Shape index	0.0070	142.6506	Viable hatching chick	0.0447	22.3929	Viable hatching chick	0.0447	22.3929
Minor diameter	0.0093	107.9251	Fertility	0.0573	17.4537	Fertility	0.0573	17.4537
Embryonic mortality 2	0.0421	23.7338	Hatchability	0.0607	16.4754	Hatchability	0.0607	16.4754
Viable hatching chick	0.0446	22.4038	Embryonic mortality 1	0.1063	9.4090	Minor diameter	0.1413	7.0750
Fertility	0.0573	17.4537	Minor diameter	0.1413	7.0750	Egg weight	0.1554	6.4347
Hatchability	0.0607	16.4817	Egg weight	0.1554	6.4347	Shape index	0.4168	2.3990
Embryonic mortality 1	0.1063	9.4091	Shape index	0.4168	2.3990	Eggshell b*	0.4867	2.0547
Egg weight	0.1507	6.6379	Eggshell b*	0.4867	2.0547	Eggshell L*	0.5303	1.8859
Eggshell b*	0.4865	2.0556	Eggshell L*	0.5303	1.8859	Mortality post-hatching	0.7196	1.3897
Eggshell L*	0.5300	1.8867	Mortality post-hatching	0.7196	1.3897	Embryonic mortality 1	0.7938	1.2598
Mortality post-hatching	0.7194	1.3900	Eggshell a*	0.8791	1.1375	Eggshell a*	0.8791	1.1375
Eggshell a*	0.8789	1.1378	Embryonic mortality	0.0000	-	Mortality at hatching	0.0000	-
Embryonic mortality	0.0000	-	Mortality at hatching	0.0000	-			
Mortality at hatching	0.0000	-						

Statistic	Tolerance	VIF
Viable hatching chick	0.0577	17.3398
Hatchability	0.0607	16.4754
Minor diameter	0.1413	7.0750
Egg weight	0.1554	6.4347
Shape index	0.4168	2.3990
Mortality at hatching	0.4320	2.3149
Eggshell b*	0.4867	2.0547
Eggshell L*	0.5303	1.8859
Fertility	0.6633	1.5075
Mortality post-hatching	0.7196	1.3897
Embryonic mortality 1	0.7938	1.2598
Eggshell a*	0.8791	1.1375

Statistic	Tolerance	VIF
Minor diameter	0.1415	7.0693
Egg weight	0.1555	6.4326
Shape index	0.4171	2.3972
Eggshell b*	0.4867	2.0545
Eggshell L*	0.5305	1.8852
Hatchability	0.6152	1.6255
Fertility	0.6727	1.4866
Mortality post-hatching	0.7255	1.3783
Mortality at hatching	0.7334	1.3634
Embryonic mortality 1	0.8138	1.2288
Eggshell a*	0.8793	1.1373

Statistic	Tolerance	VIF
Eggshell b*	0.4870	2.0533
Eggshell L*	0.5314	1.8818
Hatchability	0.6153	1.6253
Fertility	0.6727	1.4865
Post-hatching mortality	0.7257	1.3781
Mortality at hatching	0.7336	1.3632
Embryonic mortality 1	0.8139	1.2286
Eggshell a*	0.8793	1.1373
Egg weight	0.9643	1.0370
Shape index	0.9742	1.0265