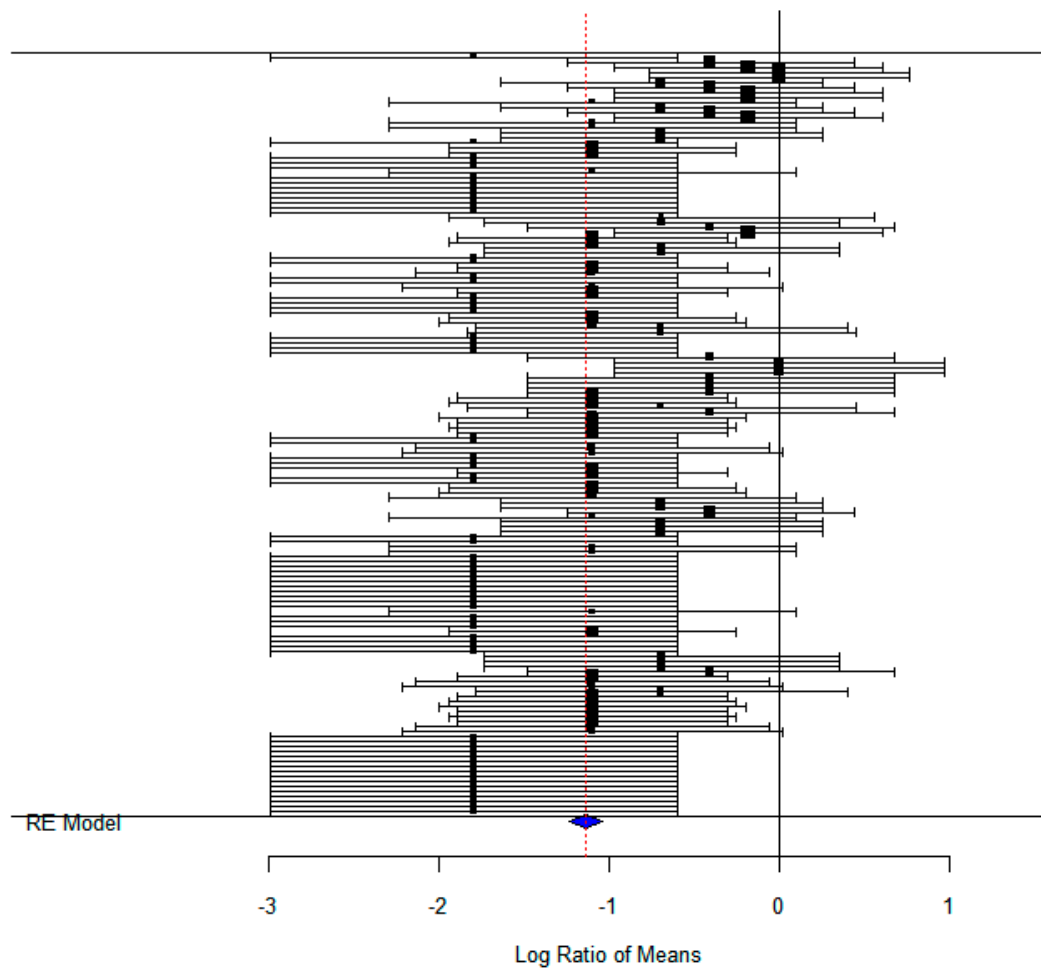
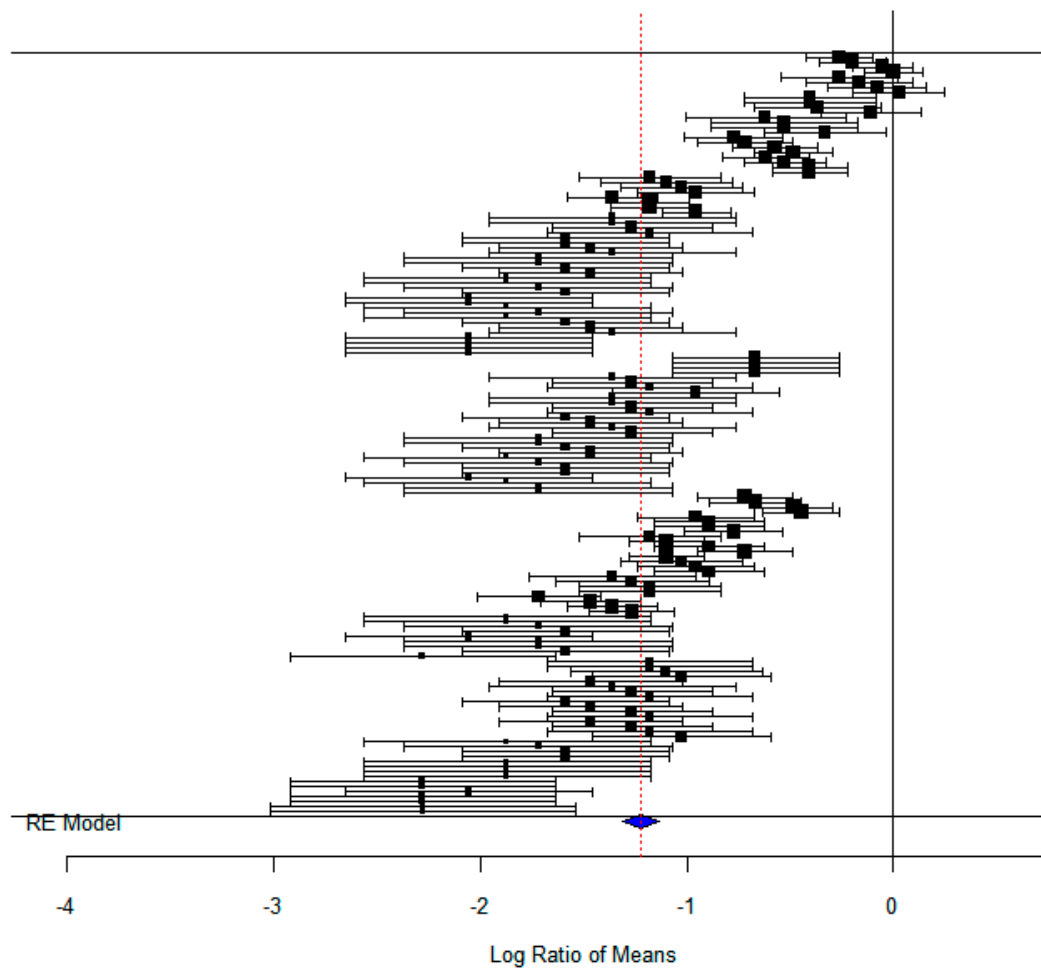


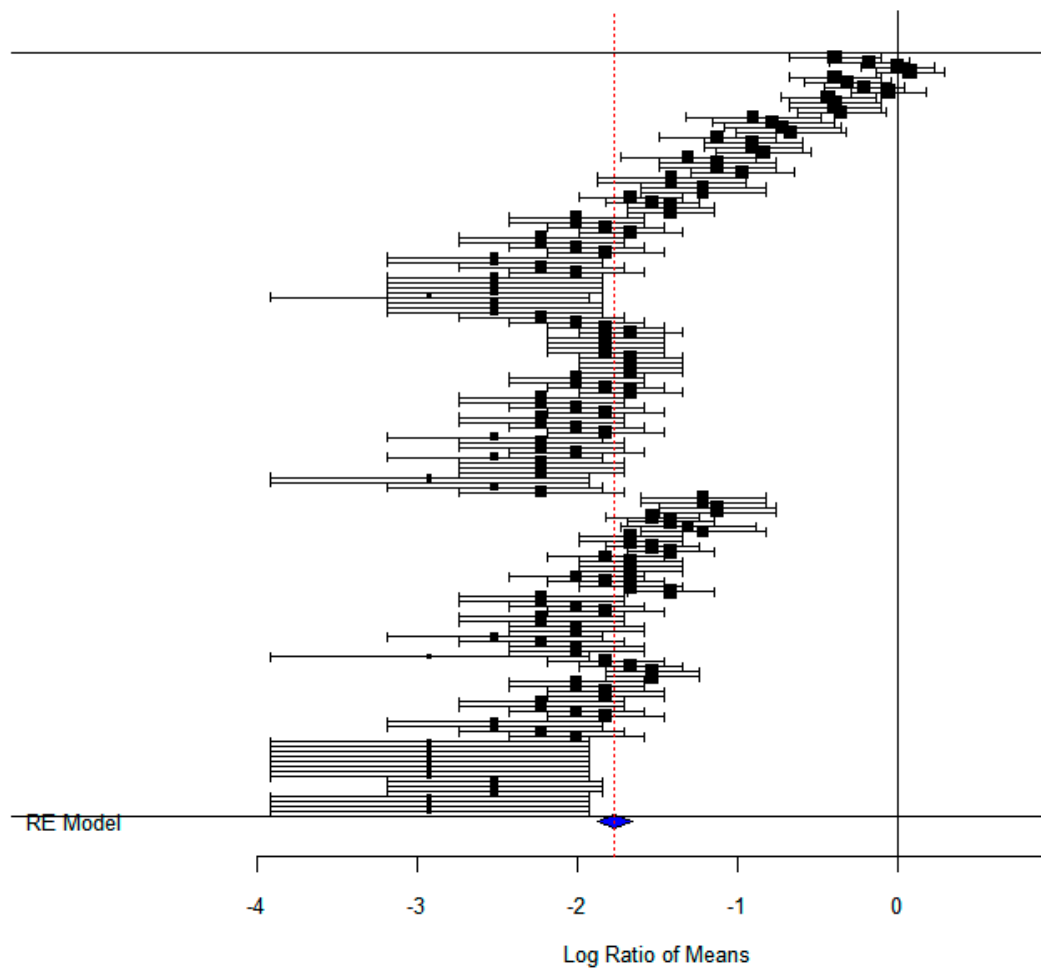
**Figure S1** Random effects model calculation results. (Black squares represent the values of the cumulative effect size for each variable. Black horizontal lines represent the 95% confidence interval. Red lines indicate the cumulative effect values. Black diamonds indicate cumulative effect sizes.)



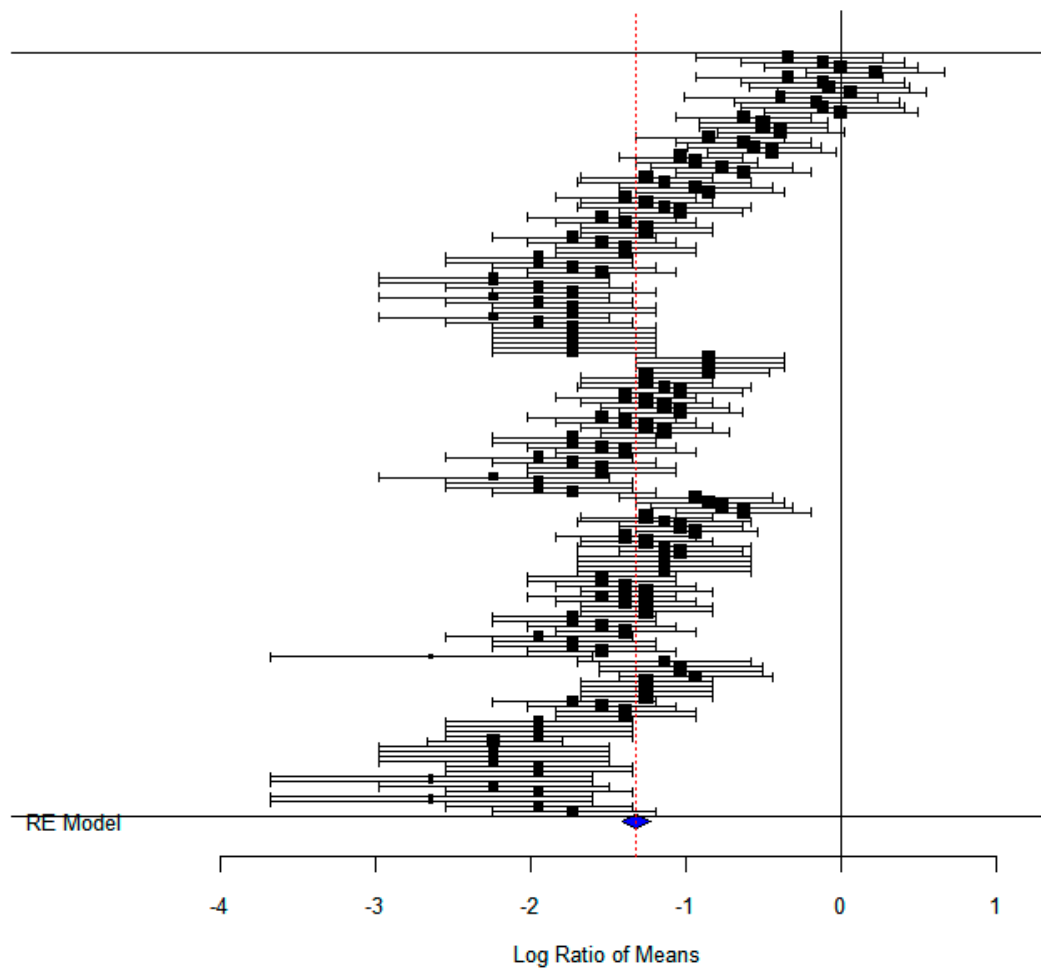
**Figure S2** Random effects model calculation results. (Black squares represent the values of the cumulative effect size for each variable. Black horizontal lines represent the 95% confidence interval. Red lines indicate the cumulative effect values. Blue diamonds indicate cumulative effect sizes.)



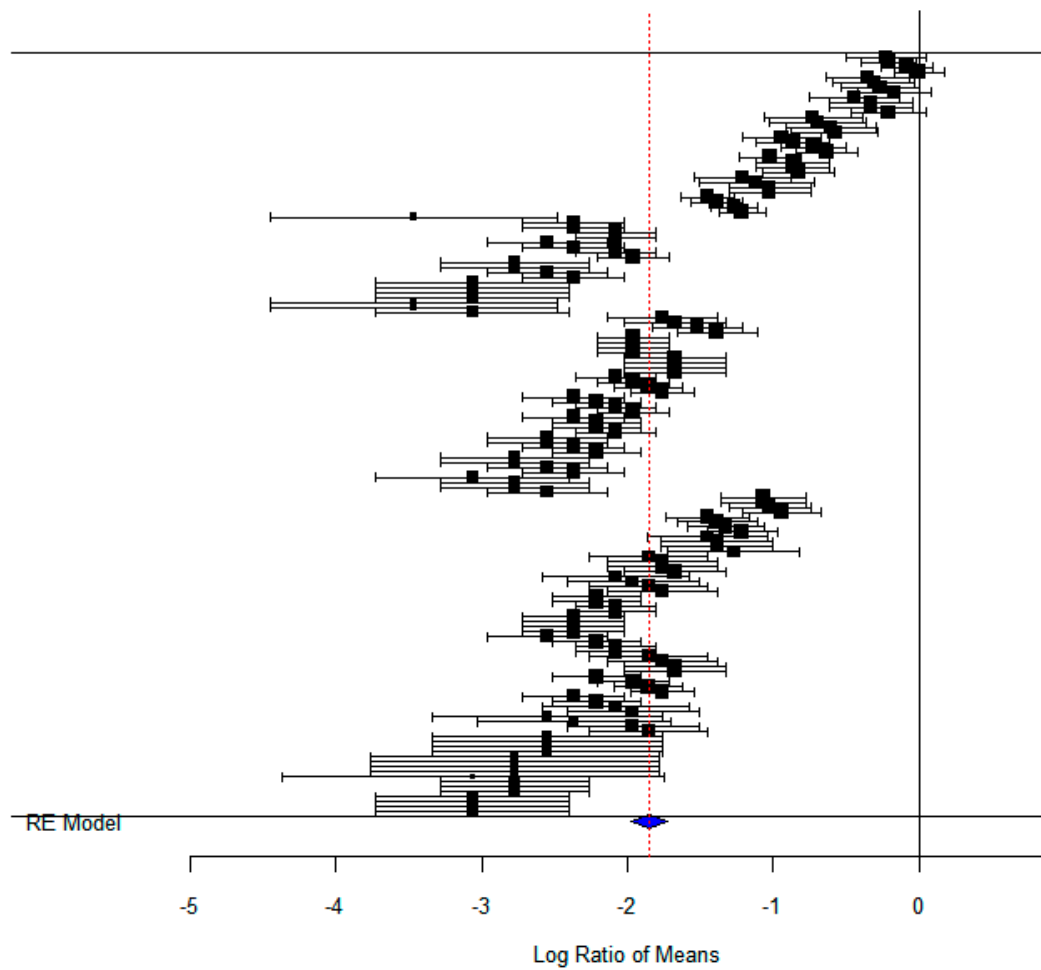
**Figure S3** Random effects model calculation results. (Black squares represent the values of the cumulative effect size for each variable. Black horizontal lines represent the 95% confidence interval. Red lines indicate the cumulative effect values. Blue diamonds indicate cumulative effect sizes.)



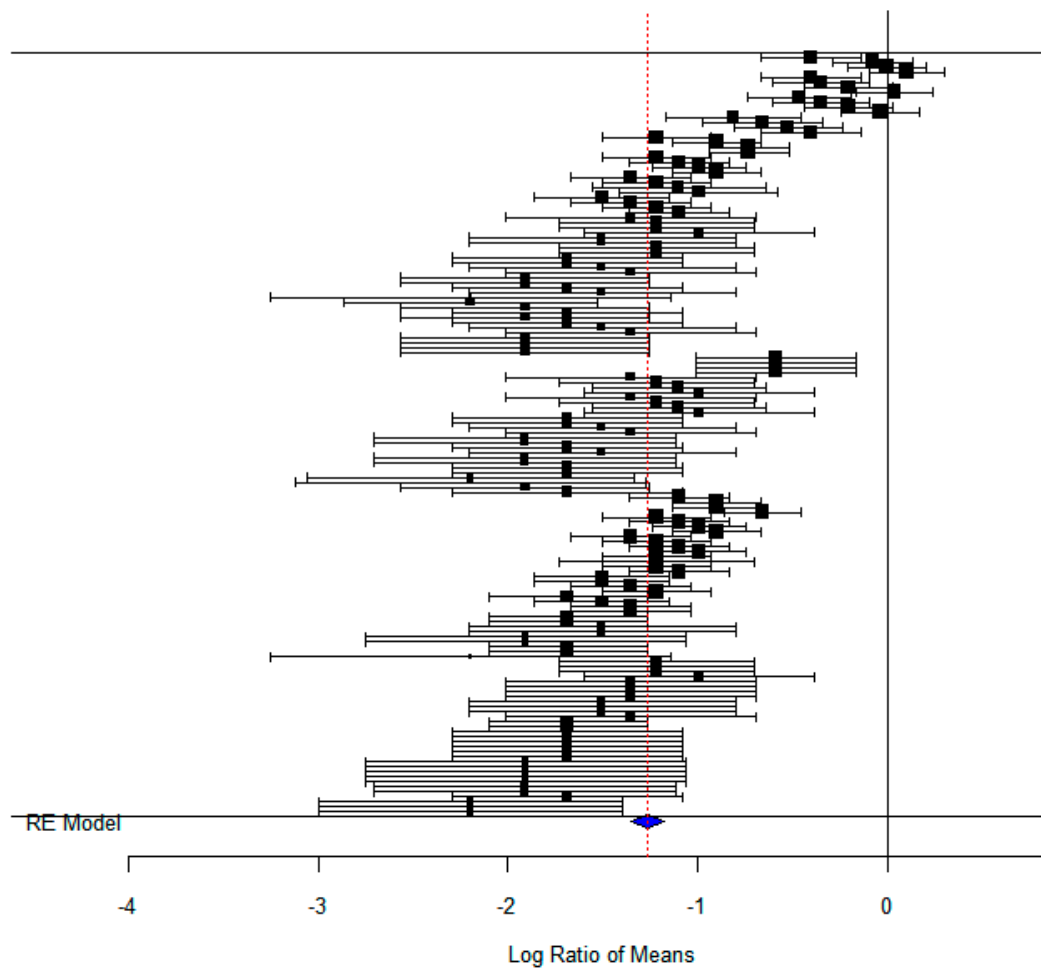
**Figure S4** Random effects model calculation results. (Black squares represent the values of the cumulative effect size for each variable. Black horizontal lines represent the 95% confidence interval. Red lines indicate the cumulative effect values. Blue diamonds indicate cumulative effect sizes.)



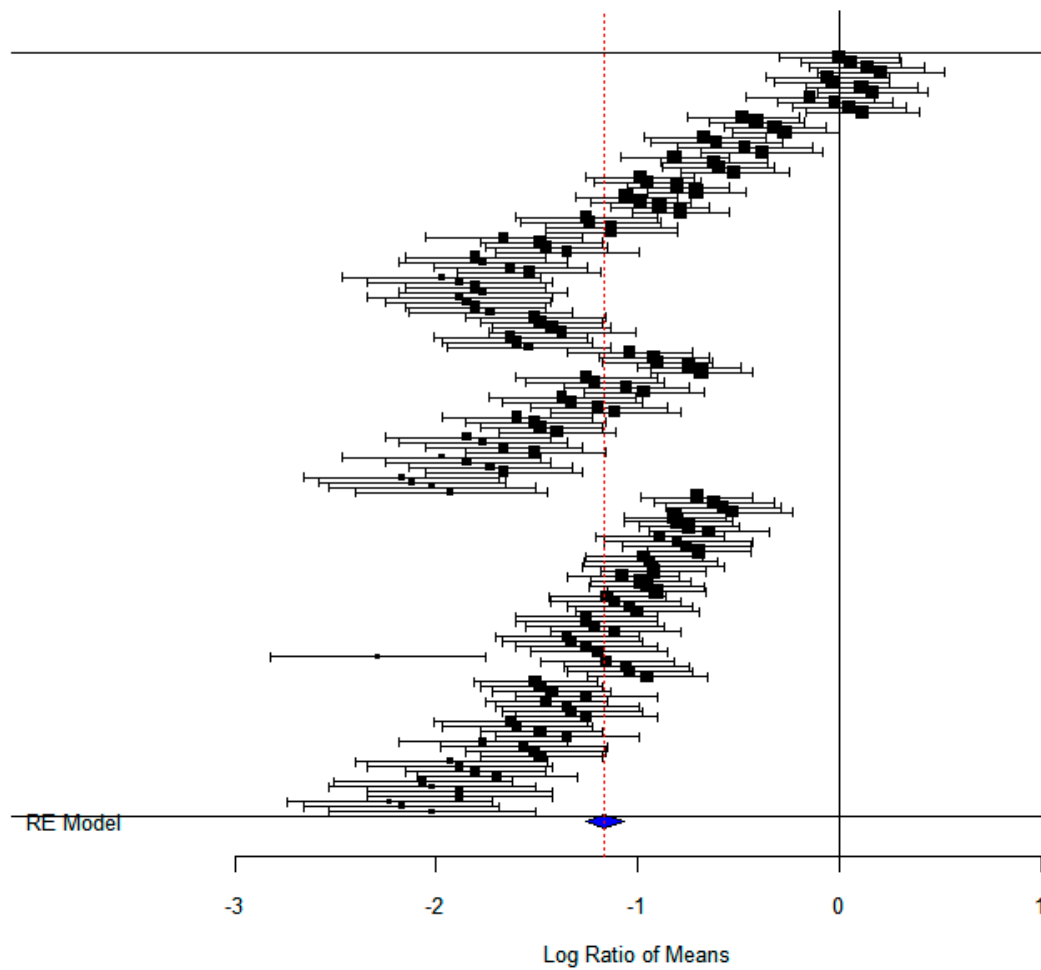
**Figure S5** Random effects model calculation results. (Black squares represent the values of the cumulative effect size for each variable. Black horizontal lines represent the 95% confidence interval. Red lines indicate the cumulative effect values. Blue diamonds indicate cumulative effect sizes.)



**Figure S6** Random effects model calculation results. (Black squares represent the values of the cumulative effect size for each variable. Black horizontal lines represent the 95% confidence interval. Red lines indicate the cumulative effect values. Blue diamonds indicate cumulative effect sizes.)



**Figure S7** Random effects model calculation results. (Black squares represent the values of the cumulative effect size for each variable. Black horizontal lines represent the 95% confidence interval. Red lines indicate the cumulative effect values. Blue diamonds indicate cumulative effect sizes.)



**Figure S8** Random effects model calculation results. (Black squares represent the values of the cumulative effect size for each variable. Black horizontal lines represent the 95% confidence interval. Red lines indicate the cumulative effect values. Blue diamonds indicate cumulative effect sizes.)



**Table S1** Effect size of temperature change on each growth stage

Germination stage				
Temperature (°C)	Estimate	LCI	UCI	
18	-0.36	-0.57	-0.15	
20	-0.69	-0.9	-0.47	
22	-0.94	-1.18	-0.71	
25	-1.19	-1.41	-0.98	
28	-1.50	-1.75	-1.26	
30	-1.65	-1.91	-1.39	
32	-1.42	-1.66	-1.18	
35	-1.49	-1.29	-1.69	
Grain filling stage				
Temperature (°C)	Estimate	LCI	UCI	
18	-0.7	-0.89	-0.51	
20	-0.97	-1.2	-0.73	
22	-0.96	-1.18	-0.73	
25	-1.11	-1.29	-0.93	
28	-1.32	-1.53	-1.11	
30	-1.42	-1.69	-1.16	
32	-1.63	-1.83	-1.43	
35	-1.74	-1.98	-1.49	
Heading stage				
Temperature (°C)	Estimate	LCI	UCI	
18	-1.28	-1.58	-0.99	
20	-1.48	-1.79	-1.16	
22	-1.5	-1.86	-1.16	
25	-1.8	-2.07	-1.53	
28	-1.98	-2.29	-1.67	
30	-2.11	-2.40	-1.83	
32	-2.03	-2.25	-1.81	
35	-1.93	-2.13	-1.72	
Jointing stage				
Temperature (°C)	Estimate	LCI	UCI	
18	-0.82	-1.02	-0.62	
20	-1.04	-1.25	-0.83	
22	-1.03	-1.29	-0.77	
25	-1.31	-1.55	-1.07	
28	-1.54	-1.80	-1.28	
30	-1.53	-1.74	-1.31	
32	-1.69	-1.88	-1.49	
35	-1.61	-1.78	-1.44	
Maturation stage				
Temperature (°C)	Estimate	LCI	UCI	
18	-1.35	-1.68	-1.02	

20	-1.54	-1.86	-1.22
22	-1.5	-1.89	-1.11
25	-1.87	-2.18	-1.55
28	-2.1	-2.46	-1.74
30	-2.28	-2.66	-1.89
32	-2.09	-2.40	-1.78
35	-2.09	-2.39	-1.79
Tillering stage			
Temperature (°C)	Estimate	LCI	UCI
18	-0.74	-0.94	-0.54
20	-0.97	-1.18	-0.76
22	-0.96	-1.21	-0.71
25	-1.26	-1.47	-1.06
28	-1.41	-1.59	-1.22
30	-1.52	-1.70	-1.33
32	-1.54	-1.70	-1.39
35	-1.67	-1.87	-1.47
Total growth period			
Temperature (°C)	Estimate	LCI	UCI
18	-0.71	-0.91	-0.5
20	-0.94	-1.2	-0.68
22	-0.84	-1.11	-0.56
25	-1.19	-1.41	-0.96
28	-1.31	-1.54	-1.08
30	-1.41	-1.64	-1.18
32	-1.47	-1.68	-1.27
35	-1.42	-1.65	-1.19