EXAMINING THE EFFECTS OF INDUCED PLANT DEFENSES ON

SPODOPTERA FRUGIPERDA PERFORMANCE

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Supplementary Material

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A)

Treatment Group	Mean	S.D.	2.5% C.I.	25% C.I.	50% C.I.	75% C.I.	97.5% C.I.	$\widehat{R}$	N. eff
Intercept	1.034	0.107	0.828	0.961	1.033	1.106	1.247	1.001	27000
Cultivar	1.086	0.205	0.688	0.946	1.084	1.223	1.489	1.001	10000
+ JA	-0.452	0.147	-0.739	-0.552	-0.451	-0.354	-0.164	1.001	22000
Cultivar : + JA	1.358	0.119	1.127	1.276	1.356	1.437	1.598	1.002	3200

B)

Model	DIC	WAIC
Null	1821.7	-2090.5
Group Means Parameterization	1754.9	-2140.6
Main Interactive Effects	1755.0	-2140.7

Table S2. A) Bayesian GLM with main interactive effects parameterization of *S. frugiperda* development time to pupation across different *G. max* cultivars crossed for innate/induced jasmonic acid plant defenses and individuals' sex. Note that the 95% Credible Intervals (C.I.) for the cultivar and sex along with the interactions overlap zero. B) DIC and WAIC scores for different models fit to *S. frugiperda* development time to pupation across different *G. max* cultivars and innate/induced jasmonic acid plant defenses (best fit model underlined).

A)

Treatment Group	Mean	S.D.	2.5% C.I.	25% C.I.	50% C.I.	75% C.I.	97.5% C.I.	$\hat{R}$	N. eff
Intercept	17.832	0.218	17.406	17.686	17.832	17.978	18.257	1.001	45000
Cultivar	0.407	0.301	-0.185	0.205	0.408	0.608	0.999	1.001	45000
+ JA	2.911	0.312	2.299	2.701	2.908	3.121	3.520	1.001	45000
Sex	-0.092	0.333	-0.751	-0.316	-0.093	0.131	0.563	1.001	45000
Cultivar : + JA	0.152	0.422	-0.669	-0.132	0.154	0.435	0.974	1.001	45000
Cultivar : Sex	0.501	0.460	-0.407	0.193	0.503	0.811	1.401	1.001	45000
+ JA : Sex	-0.151	0.519	-1.176	-0.500	-0.150	0.201	0.862	1.001	45000
Cultivar : + JA : Sex	-0.505	0.676	-1.823	-0.963	-0.509	-0.054	0.823	1.001	41000

B)

Model	DIC	WAIC
Null	1277.9	-82.3
Main Effects	1060.5	-126.2
Main Interactive Effects	1065.9	-126.1

Table S3. A) Bayesian GLM with main interactive effects parameterization of *S. frugiperda* pupal mass across different *G. max* cultivars crossed for innate/induced jasmonic acid plant defenses and individuals' sex. Note that the 95% Credible Intervals (C.I.) for all treatment groups besides the intercept overlap zero. B) DIC and WAIC scores for different models fit to *S. frugiperda* pupal mass across different *G. max* cultivars and innate/induced jasmonic acid plant defenses (best fit model underlined). Note, all estimates are on a Log scale.

A)

Treatment Group	Mean	S.D.	2.5% C.I.	25% C.I.	50% C.I.	75% C.I.	97.5% C.I.	$\hat{R}$	N. eff
Intercept	2.045	0.012	2.022	2.037	2.045	2.053	2.069	1.001	37000
Cultivar	0.005	0.017	-0.027	-0.006	0.005	0.016	0.038	1.001	36000
+ JA	-0.017	0.017	-0.051	-0.029	-0.017	-0.005	0.017	1.001	45000
Sex	-0.017	0.019	-0.054	-0.029	-0.017	-0.004	0.020	1.001	45000
Cultivar : + JA	0.016	0.024	-0.030	0.000	0.016	0.032	0.062	1.001	45000
Cultivar : Sex	0.048	0.026	-0.002	0.031	0.049	0.066	0.099	1.001	45000
+ JA : Sex	0.035	0.030	-0.022	0.015	0.035	0.055	0.093	1.001	45000
Cultivar : + JA : Sex	-0.042	0.038	-0.117	-0.068	-0.042	-0.017	0.033	1.001	45000

B)

| Model	DIC	WAIC
Null	-660.1	-2133.4
Main Effects Model	-664.1	-2156.6
Main Interactive Effects	-654.0	-2129.6

Table S4. A) Bayesian LM of total number of eggs laid for the intercept only model (null model). B) DIC and WAIC scores for different models fit to total number of eggs laid by *S. frugiperda* female pupal mass (mg) (best fit models are underlined). Note estimates are on a Ln scale.

A)

Parameter	Mean	S.D.	2.5% C.I.	25% C.I.	50% C.I.	75% C.I.	97.5% C.I.	$\widehat{R}$	N. eff
Intercept	4.653	0.273	4.110	4.479	4.653	4.828	5.193	1.001	28000

B)

Model	DIC	WAIC
Null	56.8	-8.9
Main Effect	56.3	-9.3
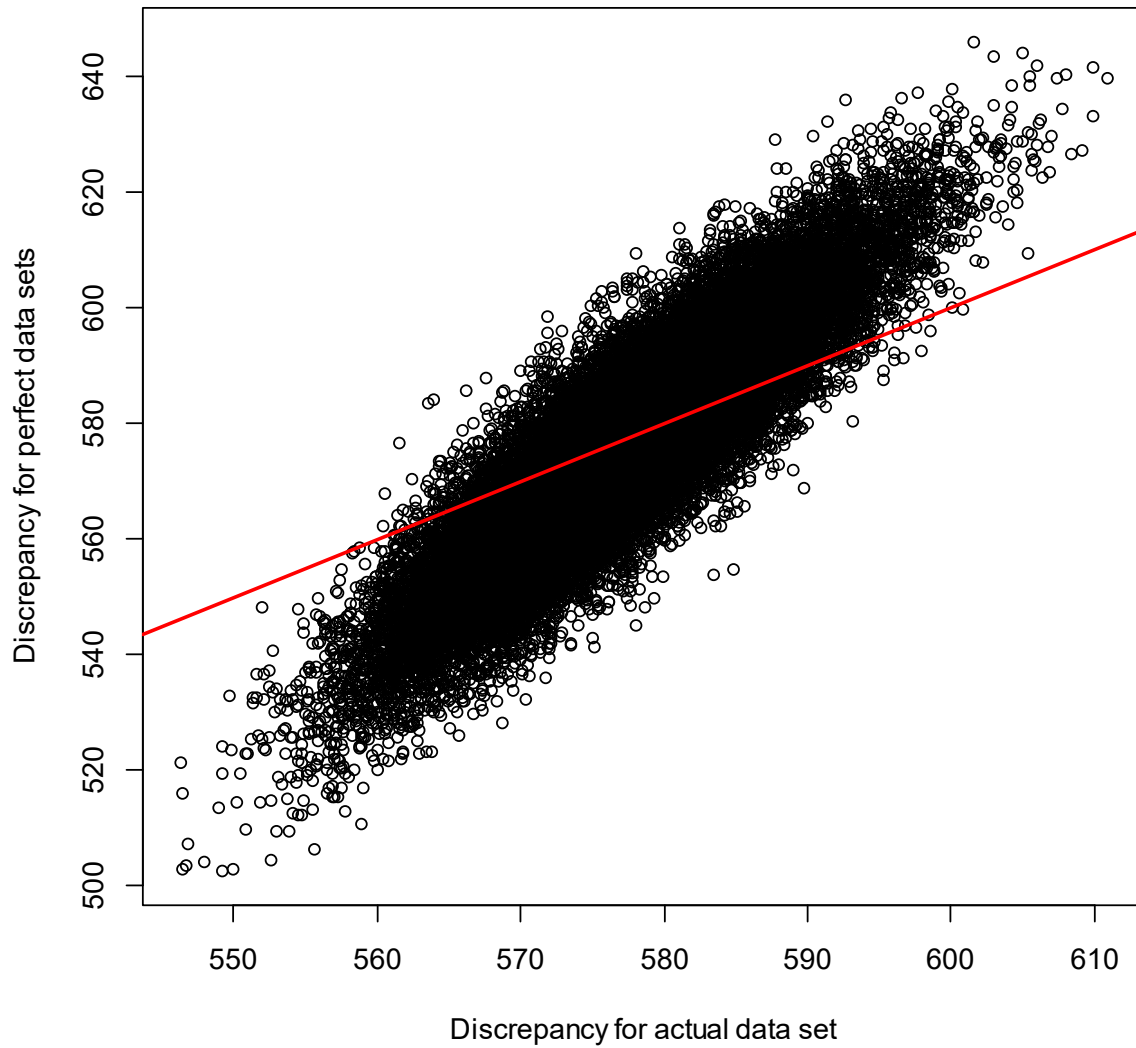
Figure S1. Posterior predictive fit for *S. frugiperda* mortality at 7 days across different *G. max* cultivars crossed for innate and induced jasmonic acid plant defenses for the group means parameterization model; Bayesian *p* = 0.466.
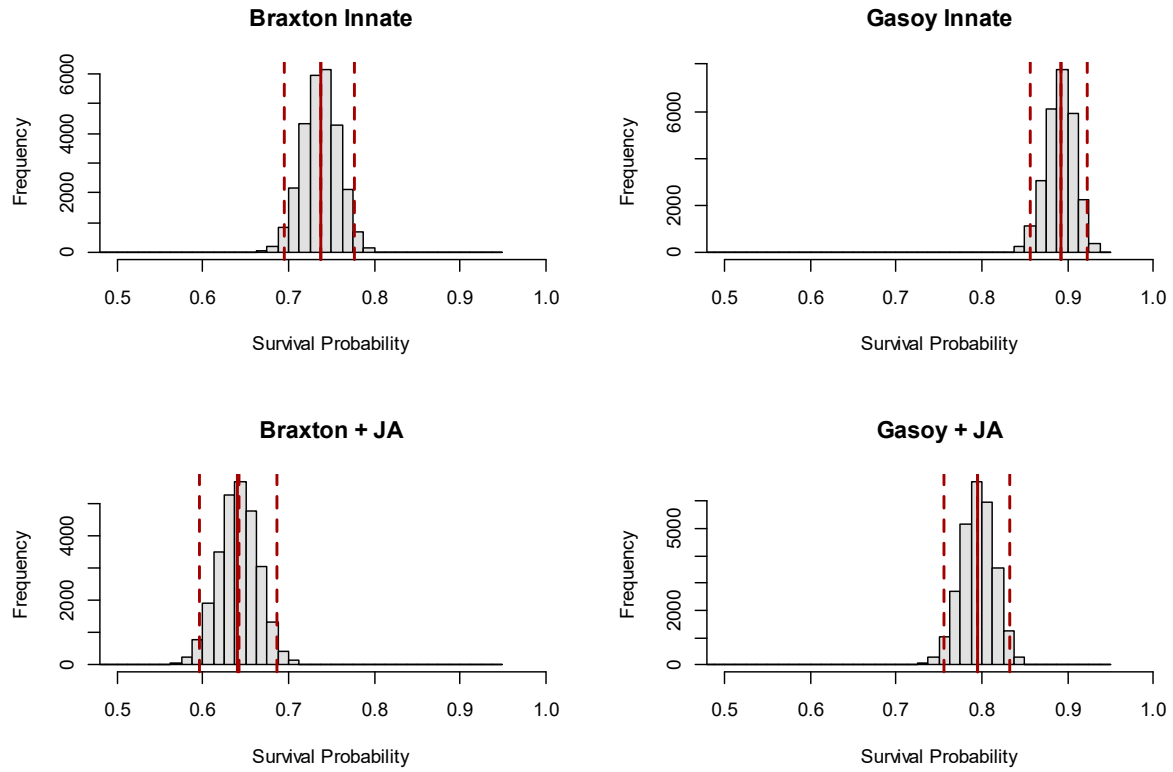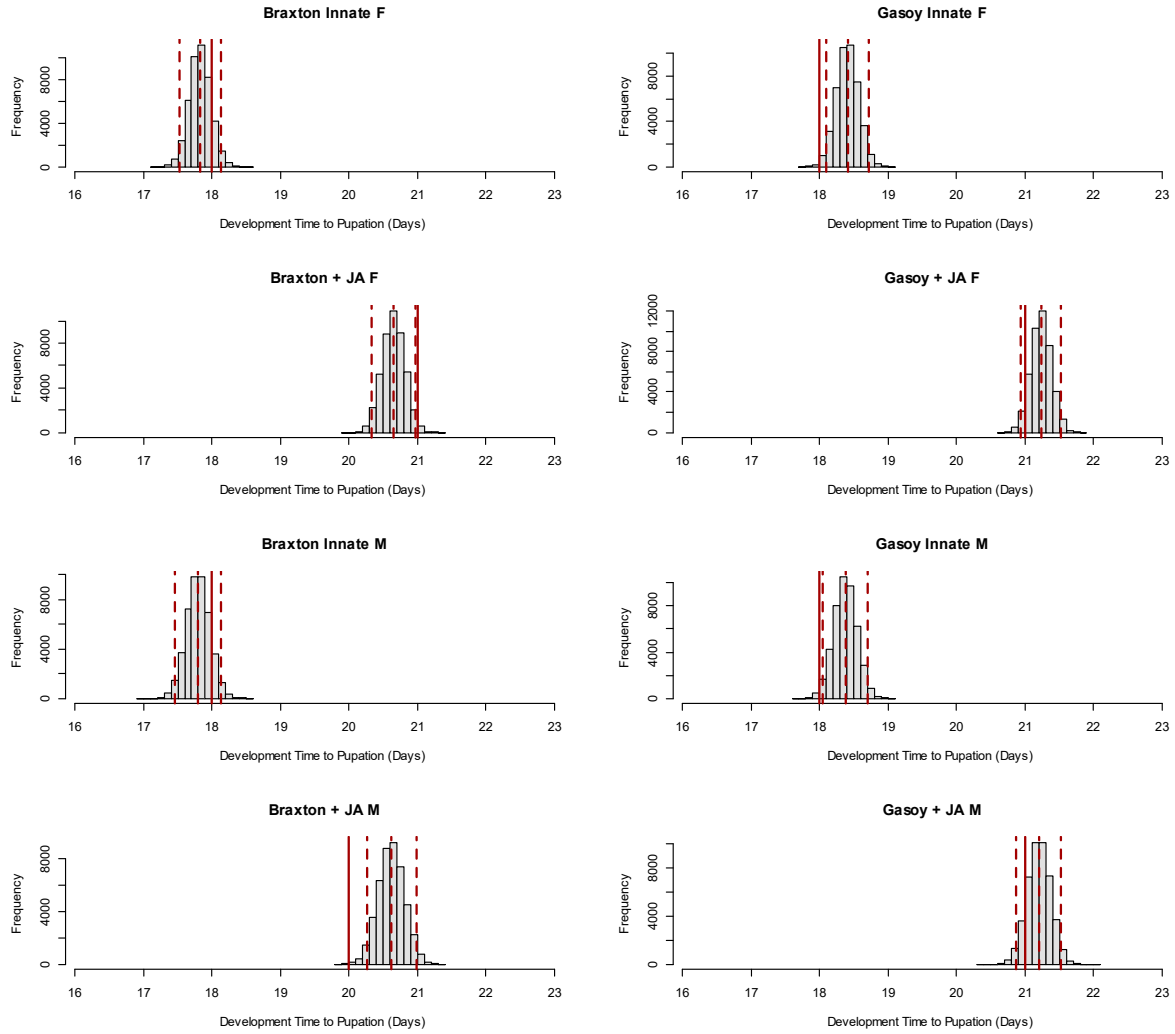
Figure S2. Posterior predictive fit estimates for *S. frugiperda* survival at 7 days across different *G. max* cultivars crossed for innate/induced jasmonic acid plant defenses for the group means parameterization model. Dashed lines represent the posterior median with 95% CI; solid lines represent the median of the actual data.
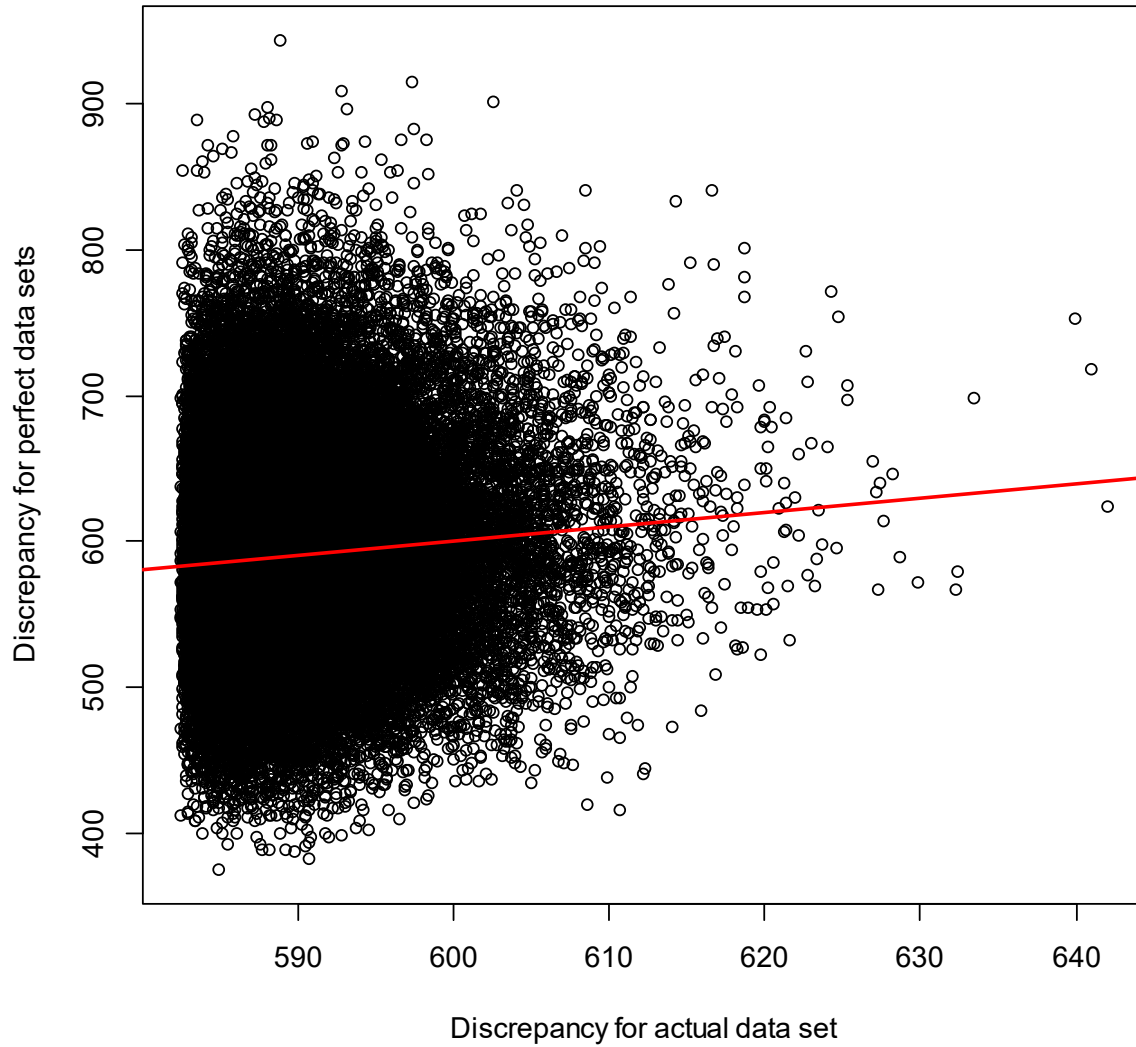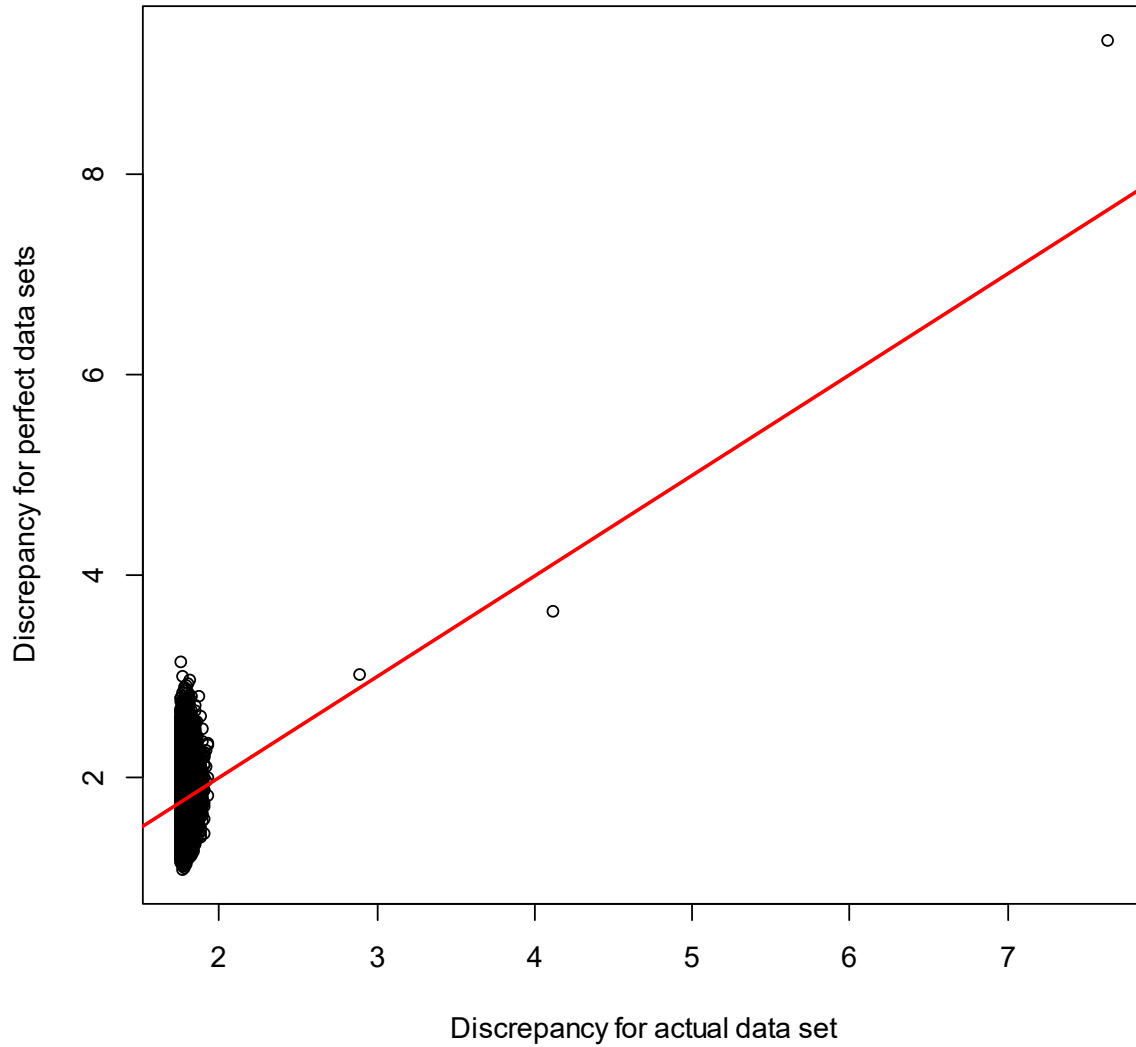
Figure S3. Posterior predictive fit for *S. frugiperda* development time in days to pupation across different *G. max* cultivars with innate/induced jasmonic acid plant defenses and sex of individual for the main effects parameterization model; Bayesian $p = 0.500$.
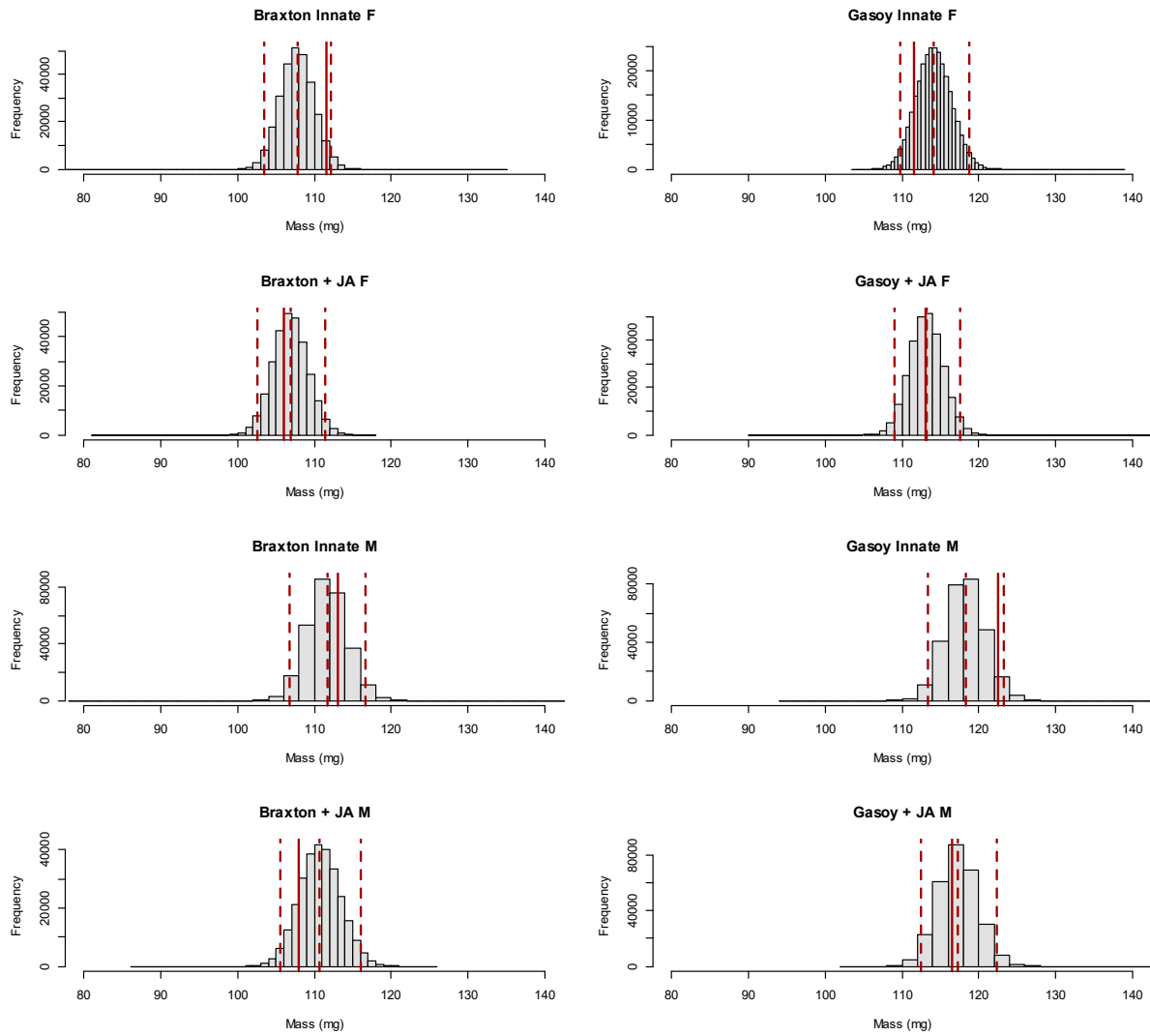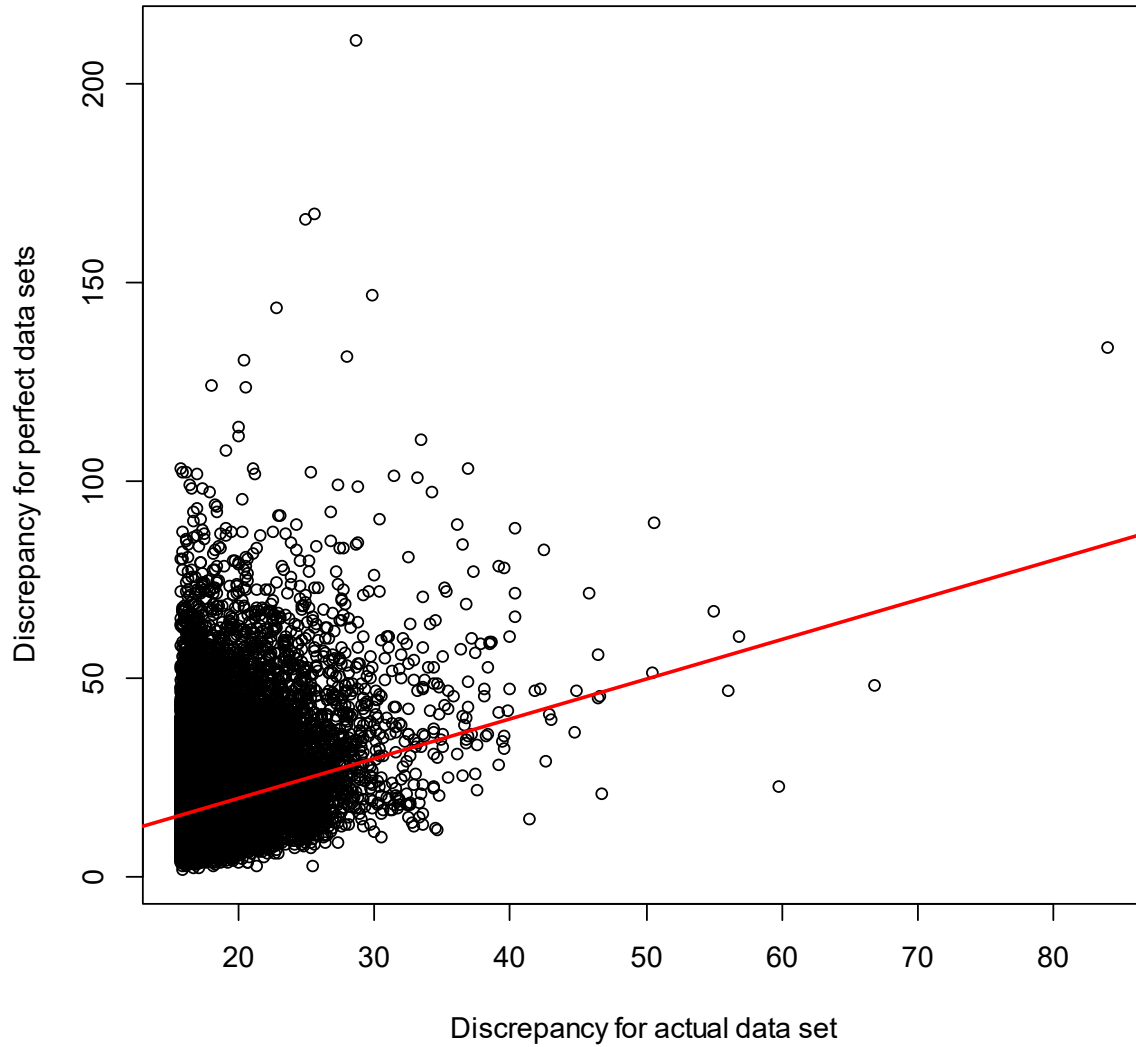
Figure S4. Posterior predictive fit estimates for *S. frugiperda* development time in days to pupation across different *G. max* cultivars with innate/induced jasmonic acid plant defenses and sex of individual for the main effects parameterization model. Dashed lines represent the posterior median with 95% CI; solid lines represent the median of the actual data.
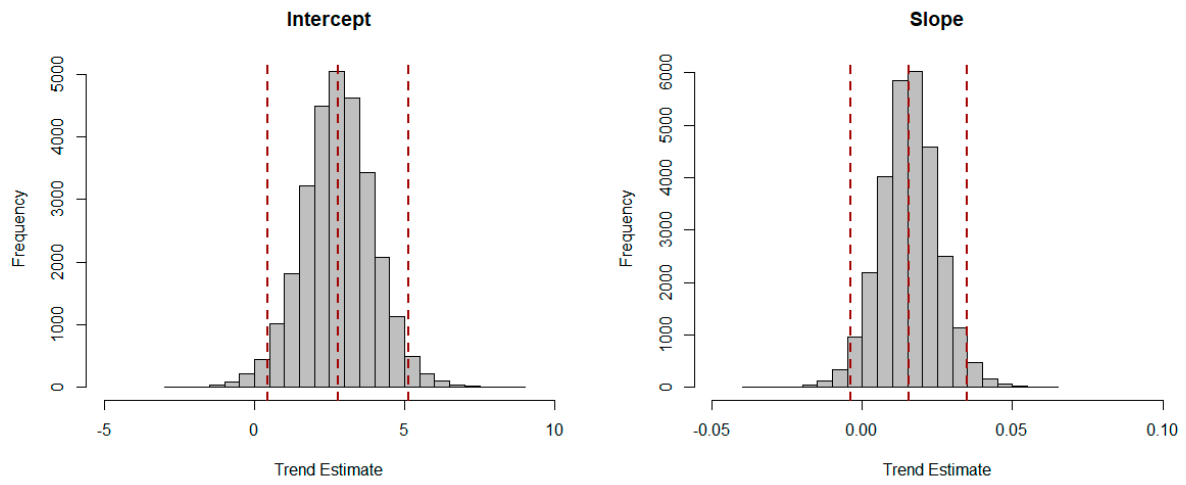
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Figure S6. Posterior predictive fit estimates for *S. frugiperda* pupal mass across different *G. max* cultivars with innate/induced jasmonic acid plant defenses and sex of individual for the main effects parameterization model. Dashed lines represent the posterior median with 95% CI (back transformed to linear); solid lines represent the median of the actual data.

Figure S7. Posterior predictive fit for total number of eggs laid by *S. frugiperda* female pupal mass for the main effects model; Bayesian *p* = 0.550.

Figure S8. Posterior predictive fit estimates for total number of eggs laid by *S. frugiperda* female pupal mass for the main effects model. Dashed lines represent the posterior median with 95% CI. Note trend estimates are on a Ln scale.