|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model | Effect Tested | AIC | df | χ2 | p-value |
| (A) Embryo Survival |  |  |  |  |  |
| **t + pop + t:pop + family + dam** |  | 12,952 |  |  |  |
| pop + family + dam | t | 14,321 | 12 | 1393.6 | < 0.001 |
| t + family + dam | pop | 15,961 | 12 | 3033.0 | < 0.001 |
| t + pop + family + dam | t:pop | 13,538 | 9 | 603.7 | < 0.001 |
| t + pop + t:pop + dam | family | 13,050 | 1 | 99.5 | < 0.001 |
| t + pop + t:pop + family | dam | 12,980 | 1 | 29.6 | < 0.001 |
| (B) Incubation Period (DPF) |  |  |  |  |  |
| **t + pop + t:pop + family + dam + sire** |  | 105,196 |  |  |  |
| pop + family + dam + sire | t | 142,298 | 12 | 37,126.0 | < 0.001 |
| t + family + dam + sire | pop | 122,925 | 12 | 17,754.0 | < 0.001 |
| t + pop + family + dam + sire | t:pop | 107,680 | 9 | 2,502.3 | < 0.001 |
| t + pop + t:pop + dam + sire | family | 105,226 | 1 | 32.6 | < 0.001 |
| t + pop + t:pop + family + sire | dam | 105,252 | 1 | 58.7 | < 0.001 |
| t + pop + t:pop + family + dam | sire | 105,203 | 1 | 9.3 | 0.002 |
| (C) Incubation Period (ADD) |  |  |  |  |  |
| **t + pop + t:pop + family + dam + sire** |  | 147,230 |  |  |  |
| pop + family + dam + sire | t | 165,884 | 12 | 18,678.0 | < 0.001 |
| t + family + dam + sire | pop | 163,550 | 12 | 16,344.0 | < 0.001 |
| t + pop + family + dam + sire | t:pop | 151,538 | 9 | 4,326.2 | < 0.001 |
| t + pop + t:pop + dam + sire | family | 147,253 | 1 | 24.7 | < 0.001 |
| t + pop + t:pop + family + sire | dam | 147,288 | 1 | 59.7 | < 0.001 |
| t + pop + t:pop + family + dam | sire | 147,237 | 1 | 9.2 | 0.002 |
| (D) Length-at-Hatch |  |  |  |  |  |
| **t + pop + t:pop + dam + sire + block** |  | 4,016 |  |  |  |
| pop + dam + sire + block | t | 4,977 | 12 | 984.8 | < 0.001 |
| t + dam + sire + block | pop | 8,187 | 12 | 4,193.8 | < 0.001 |
| t + pop + dam + sire + block | t:pop | 4,134 | 11 | 135.5 | < 0.001 |
| t + pop + t:pop + sire + block | dam | 4,159 | 1 | 144.2 | < 0.001 |
| t + pop + t:pop + dam + block | sire | 4,020 | 1 | 5.2 | 0.023 |
| t + pop + t:pop + dam + sire | block | 4017 | 1 | 2.4 | 0.125 |
| (E) Yolk-sac Volume |  |  |  |  |  |
| **t + pop + t:pop + dam + block** |  | -416 |  |  |  |
| pop + dam + block | t | 1,287 | 12 | 1,726.8 | < 0.001 |
| t + dam + block | pop | 1,726 | 12 | 2,166.4 | < 0.001 |
| t + pop + dam + block | t:pop | 73 | 10 | 506.8 | < 0.001 |
| t + pop + t:pop + block | dam | -277 | 1 | 141.8 | < 0.001 |
| t + pop + t:pop + dam | block | -377 | 1 | 41.5 | < 0.001 |