**S1 Table. MPAD model parameters, sourced from Jia et al. [24].**

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| --- | --- | --- |
| Climate-dependent parameters | | |
| *f*E | Non-diapause egg hatching rate | |
| *f*dia | Diapause egg hatching rate | |
| *f*L | Larva development rate | |
| *f*P | Pupa development rate | |
| *m*L | Larva mortality rate | |
| *m*P | Pupa mortality rate | |
| *m*A | Adult mortality rate | |
| *β* | Oviposition rate by each female | |
| *f*Ag | Gestating adult development rate | |
| *k*L | Environmental carrying capacity for larvae | |
| *k*P | Environmental carrying capacity for pupae | |
| *z*1 | Binary function for diapause eggs oviposited | |
| *z2* | Binary function for diapause egg hatching | |
| *z*dia | Binary function for adult activity during diapause period | |
|  | | |
| Climate-independent parameters | | |
| *mE* | | Non-diapause egg mortality rate |
| *mdia* | | Diapause egg mortality rate |
| *σ* | | Percentage of females at emerging adult stage |
| *μem* | | Emerging adult mortality rate |
| *μr* | | Adult mortality rate related to seeking behavior |
| *γAem* | | Emerging adult development rate |
| *γAb* | | Blood-fed adult development rate |
| *γAo* | | Ovipositing adult development rate |