**Supplementary table S1** Parametric survival analysis of immature development time, longevity, preoviposition and oviposition period of males and females of *Amblyseius swirskii* at different levels of relative humidity (RH) and water availability

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Duration | Source  | df | *χ*2 | *P* |
| Egg | RH | 2 | 11.37 | 0.003 |
| Sex | 1 | 2.72 | 0.099 |
|  | RH × Sex | 2 | 0.42 | 0.810 |
| Larva | RH | 2 | 3.49 | 0.175 |
| Water availability | 1 | 28.42 | <.0001 |
| RH × Water availability | 2 | 5.80 | 0.055 |
| Sex | 1 | 0.59 | 0.442 |
| RH × Sex | 2 | 12.70 | 0.002 |
| Water availability × Sex | 1 | 1.46 | 0.228 |
| Protonymph | RH | 2 | 5.04 | 0.081 |
| Water availability | 1 | 4.31 | 0.038 |
| Sex | 1 | 0.07 | 0.787 |
| RH × Water availability | 2 | 6.81 | 0.033 |
| RH × Sex | 2 | 1.00 | 0.605 |
| Water availability × Sex | 1 | 1.96 | 0.162 |
| Deutonymph | RH | 2 | 5.09 | 0.078 |
| Water availability | 1 | 6.77 | 0.009 |
| Sex | 1 | 9.20 | 0.002 |
| RH × Water availability | 2 | 16.15 | 0.0003 |
| RH × Sex | 2 | 4.50 | 0.106 |
| Water availability × Sex | 1 | 0.07 | 0.793 |
|  | RH × Water availability × Sex | 2 | 5.97 | 0.051 |
| Egg–adult | RH | 2 | 29.46 | <.0001 |
| Water availability | 1 | 2.98 | 0.084 |
| Sex | 1 | 0.37 | 0.543 |
| RH × Water availability | 2 | 11.23 | 0.004 |
| Water availability × Sex | 1 | 6.89 | 0.009 |
|  | RH × Sex | 2 | 6.07 | 0.048 |
| Longevity | RH | 2 | 5.84 | 0.054 |
|  | Water availability | 1 | 1.12 | 0.289 |
|  | RH × Water availability | 2 | 6.05 | 0.049 |
|  | Sex | 1 | 105.42 | <.0001 |
|  | RH × Sex | 2 | 1.30 | 0.523 |
|  | Water availability × Sex | 1 | 2.27 | 0.132 |
| Preoviposition period  | RH | 2 | 12.24 | 0.002 |
|  | Water availability | 1 | 20.97 | <.0001 |
|  | RH × Water availability | 2 | 8.19 | 0.017 |
| Oviposition period  | RH | 2 | 3.10 | 0.212 |
|  | Water availability | 1 | 1.81 | 0.178 |
|  | RH × Water availability | 2 | 2.43 | 0.296 |

**Supplementary table S2** Immature developmental durations (mean ± SE) (days) of *Amblyseius swirskii* at different relative humidities (RHs) and water availabilities. NW: no water, W: with water

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| % RH | Water availability | Egg | Larva | Protonymph |  | Deutonymph |  |
| Female | Male | 1 | Female | 4 | Male | 4 | 1 | Female | Male | 3 | 1 | Female | 5 | Male | 5 | 3 | 1 |
| 53 | NW | 1.88 ± 0.18 | 1.88 ± 0.08 | A | 0.79 ± 0.10 | αβ | 0.81 ± 0.09 | αβ |  | 2.75 ± 0.35 | 2.31 ± 0.30 | a |  | 2.50 ± 0.30 |   | 2.31 ±0.48 |   | a |  |
| W | 2.00 ± 0.24 | 2.83 ± 0.17 | 1.21 ± 0.14 | 1.17 ± 0.11 |  | 2.25 ± 0.30 | 2.50 ± 0.50 | a |  | 1.50 ± 0.13 | 1.00 ±0.18 | b |  |
| 73 | NW | 1.86 ± 0.10 | 2.00 ± 0.20 | AB | 0.97 ± 0.06 | α | 0.63 ± 0.13 | αβ | B | 2.72 ± 0.27 | 2.25 ± 0.32 | a | A | 2.31 ± 0.33 |  α | 1.63 ±0.13 |  β β | ab | A |
| W | 1.68 ± 0.15 | 2.06 ± 0.18 | 1.45 ± 0.11 | 1.33 ± 0.14 | A | 1.59 ± 0.33 | 2.17 ± 0.36 | a | B | 2.00 ± 0.20 | 1.11 ±0.22 | b | B |
| 92 | NW | 1.89 ± 0.09 | 2.11 ± 0.11 | B | 0.74 ± 0.07 | β | 1.06 ± 0.26 | αβ |  | 1.89 ± 0.11 | 1.83 ± 0.17 | a |  | 1.39 ± 0.14 |  | 1.11 ±0.20 |  | b |  |
| W | 1.85 ± 0.08 | 1.50 ± 0.20 | 0.79 ± 0.06 | 1.25 ± 0.14 |  | 1.88 ± 0.11 | 1.75 ± 0.32 | a |  | 1.32 ± 0.10 | 1.63 ±0.38 | ab |  |

1 Same uppercase letters indicate no significant differences between RH levels for egg stage.

2 Same lowercase letters indicate no significant differences between water availabilities for larval stage.

3 Same lowercase letters indicate no significant differences between pairwise combinations of RH and water availability for protonymph and deutonymph stages.

4 Same Greek letters indicate no significant differences between pairwise combinations of RH and sex for larval stage.

5 Same Greek letters indicate no significant difference between sexes for deutonymph stage.

Significance at *P* = 0.05.