**Table 1**: Heritable genetic variation among families and populations

*Model: Trait ~ (1 | Population/Family) + Block*

* Table 1 in individual trait word docs
* Values for last year included (e.g. relative growth rate measured 2019-2021; 2021 values are below)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Genetic variation within/among ALL** **populations** | | | | | |
| Population level | | | Family level | | |
| χ² | *p* | PVE | χ² | *p* | PVE |
| ***Growth traits*** | | | | | | |
| Height, before flowering | 0.427 | 0.257 | 1.186 | 9.561 | **0.001** | 9.227 |
| Height, after flowering | 0.776 | 0.189 | 1.442 | 5.626 | **0.009** | 6.616 |
| LDMC | 0.003 | 0.479 | 0.066 | 0 | 0.5 | 0 |
| Mortality\* | 0.795 | 0.186 | 4.631 | 0.778 | 0.189 | 2.419 |
| Ramets, before flowering\* | 0.032 | 0.429 | 24.281 | 68.887 | **<0.001** | 7.755 |
| Ramets, after flowering\* | 0.121 | 0.364 | 15.748 | 27.65 | **<0.001** | 4.733 |
| Relative growth rate | 0 | 0.5 | 0 | 0.073 | 0.394 | 1.051 |
| SLA | 0 | 0.5 | 0 | 0 | 0.5 | 0 |
| ***Herbivore community*** | | | | | | |
| *Danaus plexippus* abundance\* | 0.004 | 0.4765 | NA | 0 | 0.5 | 0.083 |
| *Labidomera clivicollis* abundance\* | 0.389 | 0.2665 | NA | 0 | 0.5 | 1 |
| *Liriomyza asclepiadis* abundance\* | 1.317 | 0.1255 | 6.681 | 3.062 | **0.0395** | 3.082 |
| ***Defense traits*** | | | | | | |
| Herbivory, before flowering: Binary\* | 0 | 0.5 | 0.074 | 0.001 | 0.49 | NA |
| Herbivory, before flowering: Quantitative | 0.111 | 0.3695 | 0.625 | 0.001 | 0.491 | 0.085 |
| Herbivory, after flowering: Binary\* | 0 | 0.4955 | 89.473 | 7.092 | **0.004** | NA |
| Herbivory, after flowering: Quantitative | 0 | 0.5 | 0 | 0 | 0.5 | 0 |
| Latex exudation | 4.169 | **0.0205** | 3.848 | 1.867 | 0.08 | 4.581 |
| Weevil damage: Binary\* | 0 | 0.4995 | 7.68 | 3.501 | **0.0305** | 0.737 |
| Weevil damage: Quantitative | 0 | 0.5 | 0 | 0 | 0.5 | 0 |
| ***Reproductive traits*** | | | | | | |
| Date of first flower\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| Date of first follicle\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| Flower size | 1.223 | 0.1345 | 7.189 | 0.11 | 0.37 | 4.096 |
| Flowering duration\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| Flowering success\* | 4.855 | **0.014** | 9.45 | 0.267 | 0.3025 | 7.307 |
| Follicles\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| Inflorescences\* | 3.285 | **0.035** | 8.917 | 0 | 0.4965 | 11.415 |
| Mean flowers per inflorescence\* | 0.833 | 0.1805 | NA | 0 | 0.5 | 4.558 |

*PVE = percent variance explained*

\*Variables were analyzed with generalized linear mixed models. PVE was calculated as: random effect variance/(random effect variance + residual variance) with the *get\_variance()* function from the *insight* R package. Remaining variables were analyzed with general linear mixed models and PVE was calculated as: random effect variance/(random effect variance + residual variance) with the *VarCorr()* function from the *lme4* R package.

**Table 2**: Heritable genetic variation associated with urbanization

*Model: Trait ~ (1 | Population/Family) + Block + Distance to City Center*

* Table 2 in individual trait word docs
* Values for last year included (e.g. relative growth rate measured 2019-2021; 2021 values are below)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Genetic variation within/among ALL** **populations** | | | | | |
| Population level | | | Family level | | |
| χ² | *p* | PVE | χ² | *p* | PVE |
| ***Growth traits*** | | | | | | |
| Height, before flowering | 0.266 | 0.303 | 0.937 | 9.628 | 0.001 | 9.283 |
| Height, after flowering | 0.68 | 0.205 | 1.349 | 5.698 | 0.0085 | 6.666 |
| LDMC | 0 | 0.5 | 0 | 0 | 0.5 | 0 |
| Mortality\* | 0.804 | 0.185 | 4.64 | 0.781 | 0.1885 | 2.421 |
| Ramets, before flowering\* | 0.001 | 0.485 | 24.019 | 68.905 | **<0.001** | 7.316 |
| Ramets, after flowering\* | 0.025 | 0.437 | 15.499 | 27.856 | **<0.001** | 4.298 |
| Relative growth rate | 0 | 0.5 | 0 | 0.098 | 0.377 | 1.229 |
| SLA | 0 | 0.5 | 0 | 0 | 0.5 | 0 |
| ***Herbivore community*** | | | | | | |
| *Danaus plexippus* abundance\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| *Labidomera clivicollis* abundance\* | 0.374 | 0.2705 | NA | 0 | 0.5 | 5.612 |
| *Liriomyza asclepiadis* abundance\* | 1.275 | 0.1295 | 6.742 | 3.15 | **0.038** | 3.065 |
| ***Defense traits*** | | | | | | |
| Herbivory, before flowering: Binary\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| Herbivory, before flowering: Quantitative | 0.027 | 0.4355 | 0.317 | 0.013 | 0.4545 | 0.43 |
| Herbivory, after flowering: Binary\* | 0 | 0.4945 | 88.44 | 5.815 | **0.008** | NA |
| Herbivory, after flowering: Quantitative | 0 | 0.5 | 0 | 0 | 0.5 | 0 |
| Latex exudation | 4.169 | **0.0205** | 3.848 | 1.867 | 0.086 | 4.581 |
| Weevil damage: Binary\* | 0 | 0.5 | 7.502 | 3.429 | **0.032** | 0.477 |
| Weevil damage: Quantitative | 0 | 0.5 | 0 | 0 | 0.5 | 0 |
| ***Reproductive traits*** | | | | | | |
| Date of first flower\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| Date of first follicle\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| Flower size | 1.159 | 0.141 | 7.233 | 0.103 | 0.374 | 3.994 |
| Flowering duration\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| Flowering success\* | 4.766 | **0.0145** | 9.448 | 0.268 | 0.3025 | 7.307 |
| Follicles\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| Inflorescences\* | 3.283 | **0.035** | 8.935 | 0 | 0.5 | 11.466 |
| Mean flowers per inflorescence\* | 0.203 | 0.326 | NA | 0 | 0.5 | 2.338 |

**Table 3**: Heritable genetic variation associated with urbanization

*Model: Trait ~ (1 | Population/Family) + Block + Urbanization Score*

* Table 4 in individual trait word docs
* Values for last year included (e.g. relative growth rate measured 2019-2021; 2021 values are below)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Genetic variation within/among ALL** **populations** | | | | | |
| Population level | | | Family level | | |
| χ² | *p* | PVE | χ² | *p* | PVE |
| ***Growth traits*** | | | | | | |
| Height, before flowering | 0.461 | 0.2485 | 1.242 | 9.578 | **0.001** | 9.225 |
| Height, after flowering | 0.873 | 0.175 | 1.547 | 5.642 | **0.009** | 6.618 |
| LDMC | 0 | 0.4565 | 0.138 | 0 | 0.5 | 0 |
| Mortality\* | 0.82 | 0.1825 | 4.607 | 0.758 | 0.192 | 2.421 |
| Ramets, before flowering\* | 0.034 | 0.427 | 24.27 | 68.829 | **<0.001** | 7.74 |
| Ramets, after flowering\* | 0.114 | 0.368 | 15.738 | 27.672 | **<0.001** | 4.713 |
| Relative growth rate | 0 | 0.5 | 0 | 0.101 | 0.3755 | 1.243 |
| SLA | 0 | 0.5 | 0 | 0 | 0.5 | 0 |
| ***Herbivore community*** | | | | | | |
| *Danaus plexippus* abundance\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| *Labidomera clivicollis* abundance\* | 0.358 | 0.2745 | NA | 0 | 0.5 | 5.634 |
| *Liriomyza asclepiadis* abundance\* | 1.056 | 0.152 | 6.61 | 3.204 | **0.0365** | 2.943 |
| ***Defense traits*** | | | | | | |
| Herbivory, before flowering: Binary\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| Herbivory, before flowering: Quantitative | 0.179 | 0.3365 | 0.812 | 0.001 | 0.491 | 0.084 |
| Herbivory, after flowering: Binary\* | 0.001 | 0.4865 | 88.556 | 5.699 | **0.0085** | NA |
| Herbivory, after flowering: Quantitative | 0 | 0.5 | 0 | 0 | 0.5 | 0 |
| Latex exudation | 2.784 | **0.0475** | 3.078 | 1.768 | 0.092 | 4.486 |
| Weevil damage: Binary\* | 0 | 0.5 | 7.658 | 3.499 | **0.0305** | 0.693 |
| Weevil damage: Quantitative | 0 | 0.5 | 0 | 0 | 0.5 | 0 |
| ***Reproductive traits*** | | | | | | |
| Date of first flower\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| Date of first follicle\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| Flower size | 0.833 | 0.181 | 6.365 | 0.132 | 0.358 | 4.603 |
| Flowering duration\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| Flowering success\* | 4.695 | **0.015** | 9.417 | 0.274 | 0.3005 | 7.259 |
| Follicles\* | 0 | 0.5 | NA | 0 | 0.5 | NA |
| Inflorescences\* | 3.07 | **0.04** | 9.028 | 0 | 0.5 | 11.244 |
| Mean flowers per inflorescence\* | 0.06 | 0.403 | NA | 0 | 0.5 | 1.321 |