## New Phytologist Supporting Information Instructions:

## Insert the appropriate information (title and authors) for your article below.

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## *New Phytologist* Supporting Information

Article title: Phenological germination shifts of alpine plants in contrasting microclimates

Authors: Espinosa del Alba, C., Fernández-Pascual, E. & Jiménez-Alfaro, B.

Article acceptance date: Click here to enter a date.

The following Supporting Information is available for this article:

**Table S1 Dataset of raw germination data** [Note: if your file is a large table, e.g. an Excel file, this should be submitted separately]

**Table S2 Detailed incubator programs** [Note: if your file is a large table, e.g. an Excel file, this should be submitted separately]

**Fig. S1** Germination traits correlation plots

Interfaz de usuario gráfica, Aplicación

Descripción generada automáticamente

**Table S3 Complete species germination traits** [Note: if your file is a large table, e.g. an Excel file, this should be submitted separately]

**Fig. S2** Field and laboratory germination comparison

**Fig. S3** Individual species germination curves per sampling site and incubator

Diagrama, Dibujo de ingeniería

Descripción generada automáticamente

**Table S4 PCA traits contributions to axis** [Note: if your file is a large table, e.g. an Excel file, this should be submitted separately]

**Table S5 Phylogenetic signals and random factors significances** [Note: if your file is a large table, e.g. an Excel file, this should be submitted separately]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Lambda values | Mediterranean | | | Temperate | | |
| Trait | post.mean | L\_95% CI | U\_95% CI | post.mean | L\_95% CI | U\_95% CI |
| Autumn germination | 0.97 | 0.94 | 0.99 | 0.97 | 0.94 | 1 |
| Winter germination | 0.93 | 0.86 | 0.98 | 0.96 | 0.91 | 0.99 |
| Spring germination | 0.91 | 0.81 | 0.98 | 0.93 | 0.8 | 0.99 |
| Summer germination | 0.88 | 0.74 | 0.99 | 0.85 | 0.71 | 0.96 |
| Total germination | 0.95 | 0.91 | 0.99 | 0.95 | 0.92 | 0.98 |
| t50 | 0.73 | 0.39 | 0.95 | 0.59 | 0.34 | 0.83 |
| Environmental heat sum | 0.47 | 0 | 0.78 | 0.4 | 0 | 0.74 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| animal = filogenia |  | Random = ~ animal + code:ID | | | | | |
| ID = especies |  | Mediterranean | | | Temperate | | |
| code:ID = poblacion dentro especie |  | post.mean | l-95% CI | u-95% CI | post.mean | l-95% CI | u-95% CI |
| Autumn germination | phylogeny | 40.78 | 10.45 | 84.88 | 46.73 | 8.51 | 109.03 |
| population:species | 3.25 | 0.91 | 6.62 | 3.07 | 0.26 | 7.86 |
| Winter germination | phylogeny | 26.23 | 6.26 | 55.91 | 33.7 | 0 | 72.56 |
| population:species | 1.03 | 0 | 3.27 | 1.57 | 0 | 6.8 |
| Spring germination | phylogeny | 22.98 | 4.73 | 48.8 | 37.55 | 0 | 76.44 |
| population:species | 2.48 | 0.28 | 5.58 | 1.57 | 0 | 6.92 |
| Summer germination | phylogeny | 13.94 | 1.41 | 34.33 | 11.36 | 1.84 | 22.71 |
| population:species | 0.58 | 0 | 1.86 | 1.06 | 0 | 2.9 |
| Total germination | phylogeny | 22.93 | 4.89 | 49.38 | 18.79 | 6.87 | 33.22 |
| population:species | 1.52 | 0.38 | 3.24 | 0.64 | 0 | 1.8 |
| t50 | phylogeny | 1.2 | 0 | 2.68 | 0.54 | 0.1 | 1.19 |
| population:species | 0.27 | 0.04 | 0.64 | 0.16 | 0 | 0.36 |
| Environmental heat sum | phylogeny | 0.63 | 0 | 1.6 | 0.49 | 0 | 1.4 |
| population:species | 0.38 | 0.08 | 0.77 | 0.56 | 0.14 | 1.11 |

**Methods S1** R scripts for analysis and visualization