

Plantago species show germination improvement as a function of nitrate and temperature

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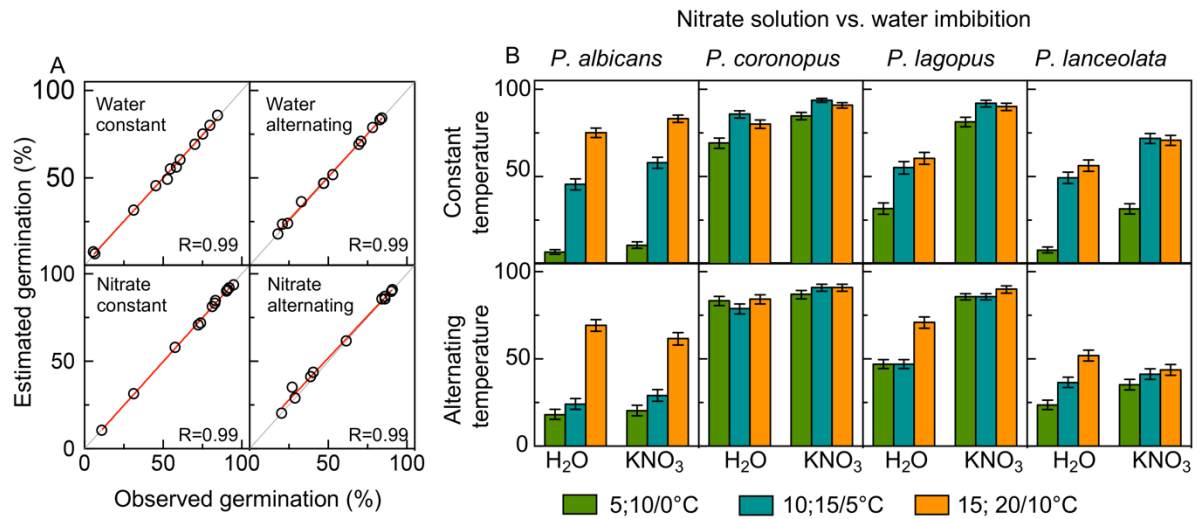


Figure. S1. Percentage of seed germination of 22 accessions of four *Plantago* species from different pedoclimates. (A) linear regression between estimated and observed germination percentage; (B) estimated percentage of germination at constant and alternating temperature in two imbibition conditions (water and 10 mM of nitrate). Data estimates were acquired using GLM (binomial distribution, logit link); The species (and number of accessions) are: *P. albicans* (5); *P. coronopus* (5); *P. lagopus* (5); and *P. lanceolata* (7). Data estimates were acquired using GLM (binomial distribution, logit link). Coloured bars show means across treatments for each temperature regime, and error-bars denote 95% binomial confidence interval. Results are grouped per treatment (H₂O = water imbibition; and KNO₃ = nitrate imbibition (10mM)).

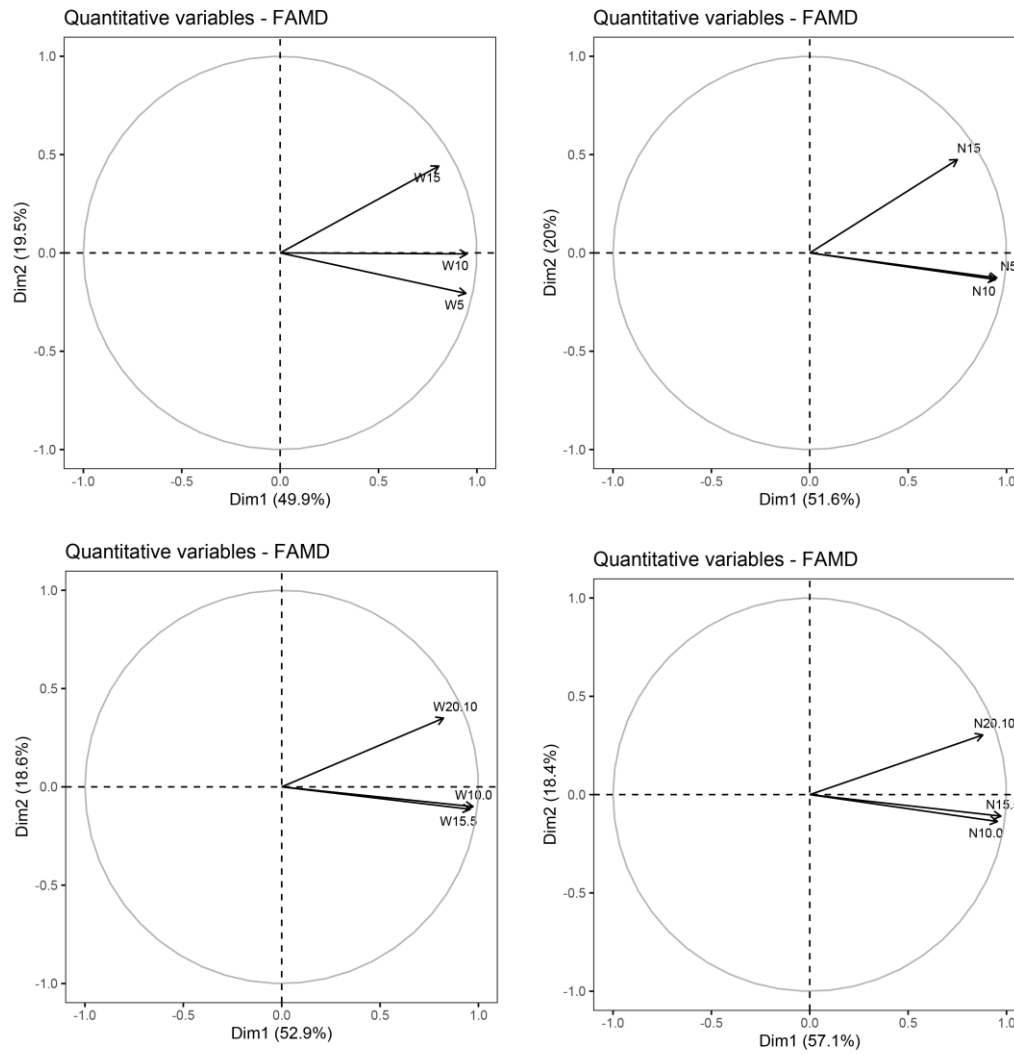


Figure. S2. Plot loadings of the Factor Analysis of Mixed Data (FAMD) presented in the Figure. 4.

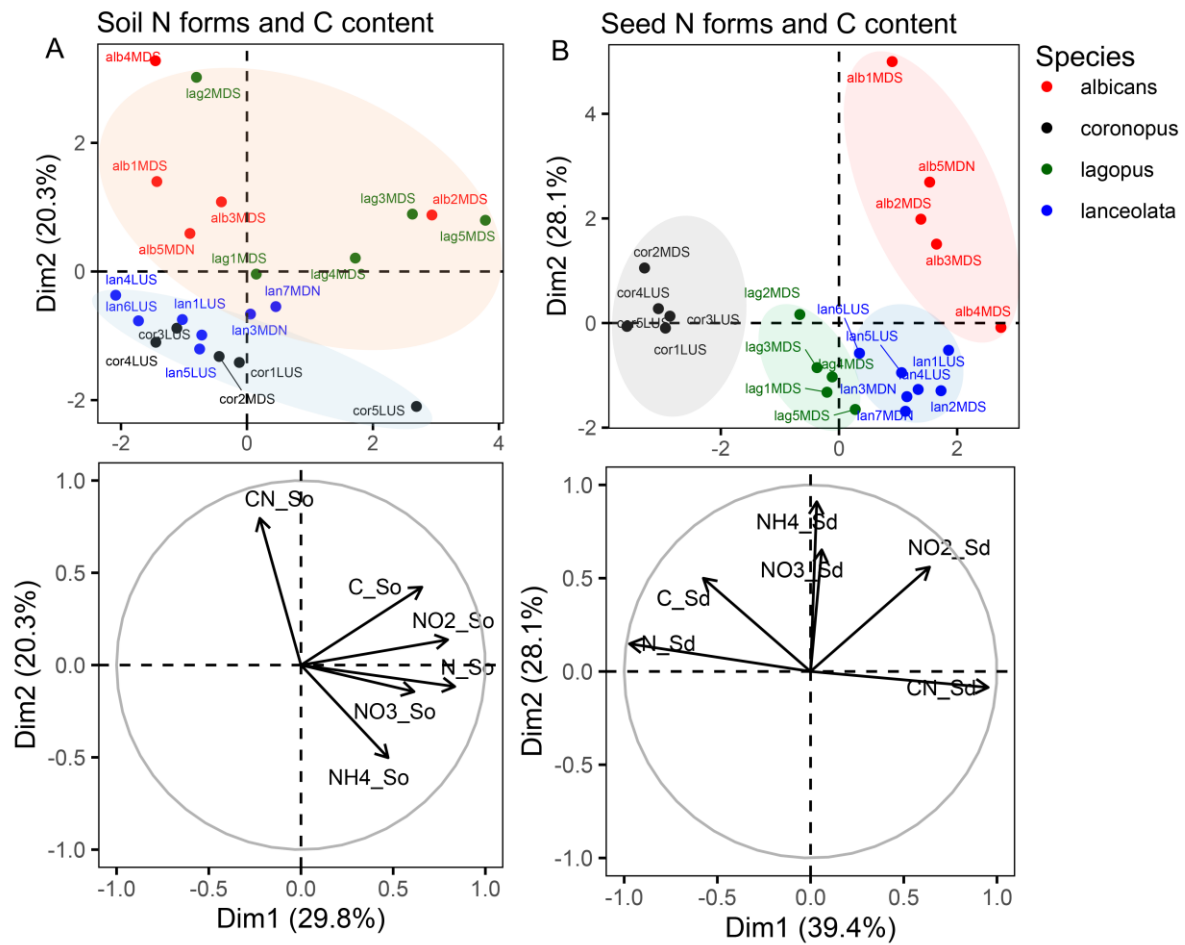


Figure. S3. Factor Analysis of Mixed Data (FAMD) of nitrogen (N) forms and carbon (C) content for: (A) soil and (B) seed samples. Colored/shadowed areas indicate clustering of accessions by pedoclimate regions for soil samples and by species for seed samples.

Table S1. Metadata of plant species seeds collected in the time of seed dispersal for each region and soil samples of each location; N forms and C content in both seeds and soil samples; the total mean of content and the ratio seeds/soil content.

| Species | Region | Pedoclimatic regions | Collecting time | Altitude (m.a.s.l.) | Latitude (DD) | Longitude (DD) | Soil | | | | | | Seed | | | | | |
|----------------------|-----------|----------------------|-----------------|---------------------|---------------|----------------|------------------------------|------------------------------|------------------------------|------|-------|-------|------------------------------|------------------------------|-------|-------|-------|------|
| | | | | | | | NO ₂ ⁻ | NO ₃ ⁻ | NH ₄ ⁺ | N | C | CN | NO ₂ ⁻ | NH ₄ ⁺ | N | C | CN | |
| | | | | | | | mg kg ⁻¹ | mg kg ⁻¹ | mg kg ⁻¹ | %DM | %d.m. | ratio | mg kg ⁻¹ | mg kg ⁻¹ | %d.m. | %d.m. | ratio | |
| <i>P. albicans</i> | Andalucía | MDS | June | 510 | 37.57072 | -4.28028 | 0.011 | 2.5 | 1.3 | 0.9 | 58.4 | 62.3 | 12.1 | 3 | 15.2 | 31 | 513.3 | 16.6 |
| <i>P. albicans</i> | Andalucía | MDS | June | 519 | 37.4432 | -4.42822 | 0.036 | 8.3 | 2.6 | 10.3 | 192.4 | 18.6 | 6.8 | 0.6 | 10.7 | 27.8 | 467 | 16.8 |
| <i>P. albicans</i> | Andalucía | MDS | June | 539 | 37.62962 | -4.29887 | 0.014 | 2.3 | 1.9 | 3.1 | 101.3 | 32.7 | 14.1 | 0.4 | 4.3 | 30.1 | 458.6 | 15.2 |
| <i>P. albicans</i> | Andalucía | MDS | June | 540 | 37.56301 | -4.29961 | 0 | 3.1 | 1.4 | 0.5 | 111.4 | 240.9 | 9.5 | 0.3 | 2.4 | 24 | 417.7 | 17.4 |
| <i>P. albicans</i> | Andalucía | MDN | June | 1051 | 37.68455 | -3.29581 | 0.039 | 3.6 | 1.8 | 1.1 | 24 | 22.5 | 11.7 | 1.6 | 9.6 | 29.5 | 466 | 15.8 |
| <i>P. coronopus</i> | Asturias | LUS | September | 80 | 43.59406 | -6.24401 | 0.008 | 8.6 | 2.1 | 2.7 | 34 | 12.4 | 1.8 | 0.4 | 1.7 | 44.6 | 482.5 | 10.8 |
| <i>P. coronopus</i> | Andalucía | MDS | June | 403 | 37.93209 | -4.88428 | 0.024 | 8.7 | 1.9 | 1 | 15.1 | 15.6 | 2.8 | 1.1 | 6.3 | 49 | 482.2 | 9.8 |
| <i>P. coronopus</i> | Portugal | LUS | July | 654 | 41.36675 | -7.72541 | 0.004 | 3.1 | 1.6 | 2.2 | 40 | 18.3 | 2.3 | 0 | 4.1 | 44.3 | 482.1 | 10.9 |
| <i>P. coronopus</i> | Portugal | LUS | July | 1006 | 41.2741 | -7.94381 | 0 | 0.3 | 2.2 | 1.6 | 32.8 | 20.1 | 1.8 | 0.1 | 4.1 | 44.8 | 490.5 | 11 |
| <i>P. coronopus</i> | Portugal | LUS | July | 1068 | 41.36675 | -7.72541 | 0.021 | 6.4 | 5.3 | 8.3 | 142.3 | 17.2 | 1.7 | 0 | 1.7 | 49.6 | 489.6 | 9.9 |
| <i>P. lagopus</i> | Andalucía | MDS | June | 403 | 37.93209 | -4.88428 | 0.024 | 8.7 | 1.9 | 1 | 15.1 | 15.6 | 2 | 0 | 1.9 | 31.9 | 458.3 | 14.4 |
| <i>P. lagopus</i> | Andalucía | MDS | June | 540 | 37.56301 | -4.29961 | 0 | 3.1 | 1.4 | 0.5 | 111.4 | 240.9 | 0.7 | 3.5 | 1.7 | 34.9 | 461.9 | 13.2 |
| <i>P. lagopus</i> | Andalucía | MDS | June | 711 | 37.32191 | -4.34772 | 0.113 | 9.1 | 2.6 | 2.3 | 121.6 | 52.8 | 2.9 | 0 | 3.4 | 33 | 467.3 | 14.2 |
| <i>P. lagopus</i> | Andalucía | MDS | June | 857 | 37.53382 | -4.31204 | 0.088 | 6.1 | 2.1 | 4.9 | 50.9 | 10.3 | 1.6 | 0 | 3.8 | 31 | 461.8 | 14.9 |
| <i>P. lagopus</i> | Andalucía | MDS | June | 1177 | 37.48784 | -4.38036 | 0.137 | 6.7 | 1.5 | 11 | 110.3 | 10 | 1.5 | 0 | 2.2 | 29.7 | 441.5 | 14.8 |
| <i>P. lanceolata</i> | Portugal | LUS | July | 389 | 41.42005 | -8.24631 | 0.003 | 5.4 | 1.7 | 2.6 | 36.5 | 14.1 | 9.4 | 1.1 | 1.2 | 26.2 | 456.8 | 17.4 |
| <i>P. lanceolata</i> | Andalucía | MDS | June | 403 | 37.93209 | -4.88428 | 0.024 | 8.7 | 1.9 | 1 | 15.1 | 15.6 | 5.1 | 0 | 2 | 24.8 | 457.1 | 18.4 |
| <i>P. lanceolata</i> | Andalucía | MDN | June | 735 | 37.78847 | -3.45198 | 0.023 | 6.8 | 2.4 | 2.9 | 80.5 | 27.6 | 4.2 | 0 | 0.7 | 27 | 463.4 | 17.1 |
| <i>P. lanceolata</i> | Portugal | LUS | July | 754 | 41.50206 | -8.08197 | 0.001 | 0.5 | 1.2 | 1.6 | 27.1 | 16.5 | 5.9 | 0 | 0.1 | 26.5 | 469.7 | 17.7 |
| <i>P. lanceolata</i> | Portugal | LUS | July | 926 | 41.59224 | -7.9543 | 0.002 | 2.2 | 3 | 3.5 | 45 | 12.7 | 8.5 | 0 | 0 | 29.2 | 471.3 | 16.2 |
| <i>P. lanceolata</i> | Portugal | LUS | July | 1006 | 41.2741 | -7.94381 | 0 | 0.3 | 2.2 | 1.6 | 32.8 | 20.1 | 9 | 0.6 | 0 | 34.2 | 469.7 | 13.7 |
| <i>P. lanceolata</i> | Andalucía | MDN | June | 1022 | 37.78512 | -3.44156 | 0.049 | 2.9 | 2.9 | 3.8 | 106 | 27.8 | 1.9 | 0 | 0.4 | 26.2 | 462.3 | 17.6 |
| Mean | | | | | | | 0.028 | 4.9 | 2.1 | 3.1 | 68.4 | 42 | 5.3 | 0.6 | 3.5 | 33.2 | 467.8 | 14.7 |
| | | | | | | | Seeds /soil | | | | | | 189.1 | 0.1 | 1.7 | 10.7 | 6.8 | 0.4 |

Table S2. Minimal adequate Generalized Linear Models (binomial error, logit link) fitted to the germination results (alternating versus constant temperatures in water; alternating versus constant temperatures in nitrate solution [10mM]; nitrate solution versus water at constant temperature; nitrate solution versus water at alternating temperatures) of each species. The minimal adequate models were obtained by a stepwise deletion of non-significant parameters, starting from a full factorial model.

| (A) Nitrate solution versus water at constant temperature | | | | | |
|--|--------------------------|---------------|--------------|---------------|-------------------|
| Specie accession | Parameter | Effect | S.E. | t | p |
| <i>P. albicans</i> | Intercept | -0.179 | 0.065 | -2.752 | 0.0060 |
| | Nitrate | 0.499 | 0.076 | 6.551 | <0.0001 |
| | 15°C | 1.287 | 0.084 | 15.316 | <0.0001 |
| | 5°C | -2.458 | 0.11 | -22.427 | <0.0001 |
| <i>P. coronopus</i> | Intercept | 1.799 | 0.088 | 20.484 | <0.0001 |
| | Nitrate | 0.909 | 0.087 | 10.434 | <0.0001 |
| | 15°C | -0.402 | 0.111 | -3.614 | <0.0001 |
| | 5°C | -0.988 | 0.105 | -9.451 | <0.0001 |
| <i>P. lagopus</i> | Intercept | 0.206 | 0.073 | 2.809 | 0.0050 |
| | Nitrate | 2.237 | 0.15 | 14.862 | <0.0001 |
| | Nitrate x 15°C | -0.44 | 0.205 | -2.143 | 0.0320 |
| | Nitrate x 5°C | 0.015 | 0.193 | 0.078 | 0.9380 |
| | 15°C | 0.218 | 0.103 | 2.109 | 0.0350 |
| | 5°C | -0.979 | 0.107 | -9.16 | <0.0001 |
| <i>P. lanceolata</i> | Intercept | -0.026 | 0.066 | -0.393 | 0.6940 |
| | Nitrate | 0.97 | 0.098 | 9.924 | <0.0001 |
| | Nitrate x 15°C | -0.335 | 0.138 | -2.426 | 0.0150 |
| | Nitrate x 5°C | 0.72 | 0.172 | 4.195 | <0.0001 |
| | 15°C | 0.278 | 0.094 | 2.961 | 0.0030 |
| | 5°C | -2.444 | 0.138 | -17.658 | <0.0001 |
| (B) Nitrate solution versus water at alternating temperatures | | | | | |
| Specie accession | Parameter | Effect | S.E. | t | p |
| <i>P. albicans</i> | Intercept | -1.149 | 0.087 | -13.208 | <0.0001 |
| | Nitrate | 0.253 | 0.119 | 2.119 | 0.0340 |
| | Nitrate x 20/10°C | -0.596 | 0.164 | -3.639 | <0.0001 |
| | Nitrate x 10/0°C | -0.108 | 0.181 | -0.597 | 0.5500 |
| | 20/10°C | 1.967 | 0.119 | 16.588 | <0.0001 |
| | 10/0°C | -0.364 | 0.131 | -2.77 | 0.0060 |
| <i>P. coronopus</i> | Intercept | 1.317 | 0.088 | 15.028 | <0.0001 |
| | Nitrate | 0.999 | 0.152 | 6.567 | <0.0001 |
| | Nitrate x 20/10°C | -0.371 | 0.22 | -1.686 | 0.0920 |
| | Nitrate x 10/0°C | -0.711 | 0.211 | -3.371 | 0.0010 |
| | 20/10°C | 0.367 | 0.132 | 2.775 | 0.0060 |
| | 10/0°C | 0.3 | 0.131 | 2.288 | 0.0220 |

| | | | | | |
|----------------------|--------------------------|---------------|--------------|---------------|-------------------|
| <i>P. lagopus</i> | Intercept | -0.118 | 0.051 | -2.285 | 0.0220 |
| | Nitrate | 1.906 | 0.09 | 21.176 | <0.0001 |
| | 20/10°C | 1.011 | 0.094 | 10.721 | <0.0001 |
| <i>P. lanceolata</i> | Intercept | -0.552 | 0.065 | -8.451 | <0.0001 |
| | Nitrate | 0.2 | 0.092 | 2.181 | 0.0290 |
| | Nitrate x 20/10°C | -0.531 | 0.129 | -4.124 | <0.0001 |
| | Nitrate x 10/0°C | 0.364 | 0.137 | 2.658 | 0.0080 |
| | 20/10°C | 0.633 | 0.091 | 6.942 | <0.0001 |
| | 10/0°C | -0.623 | 0.1 | -6.239 | <0.0001 |

(C) Alternating *versus* Constant in water

| Specie accession | Parameter | Effect | S.E. | t | p |
|----------------------|----------------------------|--------|-------|---------|---------|
| <i>P. albicans</i> | Intercept | -0.181 | 0.074 | -2.439 | 0.0150 |
| | Water alternated | -0.968 | 0.114 | -8.457 | <0.0001 |
| | Water alternated x 20/10°C | 0.659 | 0.165 | 4.007 | <0.0001 |
| | Water alternated x 10/0°C | 2.135 | 0.214 | 9.954 | <0.0001 |
| | 20/10°C | 1.308 | 0.114 | 11.467 | <0.0001 |
| | 10/0°C | -2.499 | 0.17 | -14.736 | <0.0001 |
| <i>P. coronopus</i> | Intercept | 1.706 | 0.098 | 17.479 | <0.0001 |
| | Water alternated | -0.389 | 0.131 | -2.964 | 0.0030 |
| | Water alternated x 20/10°C | 0.69 | 0.187 | 3.69 | <0.0001 |
| | Water alternated x 10/0°C | 1.122 | 0.182 | 6.151 | <0.0001 |
| | 20/10°C | -0.323 | 0.132 | -2.443 | 0.0150 |
| | 10/0°C | -0.822 | 0.127 | -6.484 | <0.0001 |
| <i>P. lagopus</i> | Intercept | 0.206 | 0.073 | 2.809 | 0.0050 |
| | Water alternated | -0.303 | 0.103 | -2.938 | 0.0030 |
| | Water alternated x 20/10°C | 0.771 | 0.149 | 5.181 | <0.0001 |
| | Water alternated x 10/0°C | 0.935 | 0.148 | 6.303 | <0.0001 |
| | 20/10°C | 0.218 | 0.103 | 2.109 | 0.0350 |
| | 10/0°C | -0.979 | 0.107 | -9.16 | <0.0001 |
| <i>P. lanceolata</i> | Intercept | -0.026 | 0.066 | -0.393 | 0.6940 |
| | Water alternated | -0.526 | 0.093 | -5.686 | <0.0001 |
| | Water alternated x 20/10°C | 0.355 | 0.131 | 2.713 | 0.0070 |
| | Water alternated x 10/0°C | 1.821 | 0.171 | 10.665 | <0.0001 |
| | 20/10°C | 0.278 | 0.094 | 2.961 | 0.0030 |
| | 10/0°C | -2.444 | 0.138 | -17.658 | <0.0001 |

(D) Alternating *versus* Constant temperatures in Nitrate solution

| Specie accession | Parameter | Effect | S.E. | t | p |
|--------------------|------------------------------|--------|-------|---------|---------|
| <i>P. albicans</i> | Intercept | 0.323 | 0.077 | 4.198 | <0.0001 |
| | Nitrate alternated | -1.219 | 0.112 | -10.864 | <0.0001 |
| | Nitrate alternated x 20/10°C | 0.111 | 0.168 | 0.659 | 0.5100 |
| | Nitrate alternated x 10/0°C | 1.96 | 0.191 | 10.258 | <0.0001 |

| | | | | | |
|----------------------|-------------------------------------|--------|-------|---------|---------|
| | 20/10°C | 1.261 | 0.124 | 10.156 | <0.0001 |
| | 10/0°C | -2.432 | 0.144 | -16.833 | <0.0001 |
| <i>P. coronopus</i> | Intercept | 2.939 | 0.164 | 17.887 | <0.0001 |
| | Nitrate alternated | -0.622 | 0.206 | -3.02 | 0.0030 |
| | Nitrate alternated \times 20/10°C | 0.597 | 0.274 | 2.184 | 0.0290 |
| | Nitrate alternated \times 10/0°C | 0.92 | 0.253 | 3.639 | <0.0001 |
| | 20/10°C | -0.602 | 0.209 | -2.873 | 0.0040 |
| | 10/0°C | -1.331 | 0.191 | -6.958 | <0.0001 |
| <i>P. lagopus</i> | Intercept | 2.443 | 0.131 | 18.6 | <0.0001 |
| | Nitrate alternated | -0.763 | 0.165 | -4.619 | <0.0001 |
| | Nitrate alternated \times 20/10°C | 0.745 | 0.237 | 3.145 | 0.0020 |
| | Nitrate alternated \times 10/0°C | 1.192 | 0.218 | 5.458 | <0.0001 |
| | 20/10°C | -0.222 | 0.177 | -1.251 | 0.2110 |
| | 10/0°C | -0.964 | 0.16 | -6.015 | <0.0001 |
| <i>P. lanceolata</i> | Intercept | 0.916 | 0.051 | 18.079 | <0.0001 |
| | Nitrate alternated | -1.216 | 0.068 | -17.867 | <0.0001 |
| | Nitrate alternated \times 10/0°C | 1.384 | 0.119 | 11.593 | <0.0001 |
| | 10/0°C | -1.695 | 0.087 | -19.426 | <0.0001 |

Table S3. Minimal adequate Generalized Linear Models of testing the effect of soil and seeds nitrogen forms and carbon on species germination (based on second axis of the FAMD).

| Water imbibition (constant temperatures) | | | |
|--|------------------|----------------|------------------|
| res.pca.wc.dim2 | | | |
| <i>Predictors</i> | <i>Estimates</i> | <i>CI</i> | <i>p</i> |
| (Intercept) | 4.27 | -4.21 – 12.74 | 0.324 |
| NO2 So | -10.67 *** | -15.49 – -5.85 | <0.001 |
| NO3 So | -0.03 | -0.08 – 0.02 | 0.220 |
| NH4 So | -0.17 | -0.38 – 0.04 | 0.118 |
| N So | -0.06 | -0.15 – 0.02 | 0.149 |
| C So | 0.01 *** | 0.01 – 0.02 | <0.001 |
| CN So | -0.00 | -0.01 – 0.00 | 0.310 |
| NO2 Sd | 0.14 *** | 0.09 – 0.19 | <0.001 |
| NO3 Sd | -0.15 | -0.37 – 0.07 | 0.187 |
| NH4 Sd | 0.16 *** | 0.10 – 0.21 | <0.001 |
| N Sd | 0.12 * | 0.01 – 0.23 | 0.029 |
| C Sd | -0.03 ** | -0.04 – -0.01 | 0.003 |
| CN Sd | 0.22 | -0.04 – 0.49 | 0.099 |
| Observations | 22 | | |
| R ² | 0.98 | | |
| * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ | | | |

| KNO ₃ solution imbibition (constant temperatures) | | | |
|--|------------------|---------------|------------------|
| res.pca.wa.dim2 | | | |
| <i>Predictors</i> | <i>Estimates</i> | <i>CI</i> | <i>p</i> |
| (Intercept) | 13.64 ** | 5.37 – 21.91 | 0.001 |
| C So | 0.00 | -0.00 – 0.01 | 0.067 |
| CN So | 0.01 ** | 0.00 – 0.01 | 0.002 |
| NO2 Sd | 0.09 ** | 0.03 – 0.14 | 0.003 |
| NO3 Sd | -0.34 * | -0.62 – -0.05 | 0.020 |
| NH4 Sd | 0.23 *** | 0.16 – 0.29 | <0.001 |
| N Sd | -0.19 *** | -0.30 – -0.08 | 0.001 |
| CN Sd | -0.62 *** | -0.93 – -0.30 | <0.001 |
| Observations | 22 | | |
| R ² | 0.9 | | |
| * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ | | | |

| Water imbibition (alternating temperatures) | | | |
|---|--|--|--|
| res.pca.nc.dim2 | | | |

| <i>Predictors</i> | <i>Estimates</i> | <i>CI</i> | <i>p</i> |
|--|------------------|---------------|------------------|
| (Intercept) | 8.35 | -1.84 – 18.54 | 0.108 |
| NH4 So | -0.19 | -0.52 – 0.14 | 0.254 |
| N So | 0.12 ** | 0.03 – 0.21 | 0.010 |
| CN So | 0.01 *** | 0.01 – 0.01 | <0.001 |
| NO2 Sd | 0.11 *** | 0.05 – 0.18 | 0.001 |
| NO3 Sd | -0.45 ** | -0.76 – -0.14 | 0.004 |
| NH4 Sd | 0.22 *** | 0.14 – 0.30 | <0.001 |
| N Sd | -0.10 | -0.24 – 0.05 | 0.181 |
| CN Sd | -0.45 * | -0.84 – -0.06 | 0.023 |
| Observations | 22 | | |
| R ² | 0.896 | | |
| * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ | | | |

| KNO ₃ solution imbibition (alternating temperatures) | | | |
|---|------------------|---------------|------------------|
| res.pca.na.dim2 | | | |
| <i>Predictors</i> | <i>Estimates</i> | <i>CI</i> | <i>p</i> |
| (Intercept) | 11.05 * | 2.23 – 19.88 | 0.014 |
| N So | 0.07 * | 0.00 – 0.15 | 0.048 |
| CN So | 0.01 *** | 0.00 – 0.01 | <0.001 |
| NO2 Sd | 0.09 ** | 0.03 – 0.15 | 0.005 |
| NO3 Sd | -0.39 ** | -0.68 – -0.10 | 0.008 |
| NH4 Sd | 0.24 *** | 0.17 – 0.31 | <0.001 |
| N Sd | -0.15 * | -0.27 – -0.03 | 0.013 |
| CN Sd | -0.53 ** | -0.86 – -0.19 | 0.002 |
| Observations | 22 | | |
| R ² | 0.891 | | |
| * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ | | | |

Table S4. GLM comparative analysis assessed the relationship between seed traits, and the temperature vs. germination response by each species in water and KNO₃ imbibition.

| Species | Incubation | Temperature | Trait | Estimate | Std. Error | t value | Pr(> t) |
|---------------------|--------------------------|-------------|---------------|---------------|--------------|---------------|-----------------|
| <i>P. albicans</i> | Water | 5 | (Intercept) | -11.973 | 2.878 | -4.160 | 0.002 ** |
| | | | Sd_N | 0.356 | 0.085 | 4.199 | 0.002 ** |
| | | | NO3_Sd | -0.009 | 0.007 | -1.257 | 0.237 |
| | | | C_Sd | -0.021 | 0.005 | -4.228 | 0.002 ** |
| | | | CN_Sd | 0.715 | 0.169 | 4.221 | 0.002 ** |
| | | 10 | (Intercept) | -27.811 | 12.966 | -2.145 | 0.055 . |
| | | | Sd_N | 0.834 | 0.382 | 2.184 | 0.052 . |
| | | | C_Sd | -0.050 | 0.022 | -2.240 | 0.047 * |
| | | | CN_Sd | 1.698 | 0.761 | 2.231 | 0.047 * |
| | | 15 | (Intercept) | 0.921 | 0.087 | 10.573 | 0.000 *** |
| | | | NO2_Sd | -0.009 | 0.005 | -1.664 | 0.122 |
| | | | NO3_Sd | -0.062 | 0.027 | -2.306 | 0.040 * |
| | | 10/0 | (Intercept) | -11.620 | 4.952 | -2.346 | 0.041 * |
| | | | Sd_N | 0.352 | 0.146 | 2.412 | 0.037 * |
| | | | NO2_Sd | 0.003 | 0.002 | 1.254 | 0.239 |
| | | | C_Sd | -0.022 | 0.009 | -2.538 | 0.030 * |
| | | | CN_Sd | 0.722 | 0.291 | 2.484 | 0.032 * |
| | | 15/5 | Intercept) | 0.242 | 0.033 | 7.403 | 0.000 *** |
| | | 20/10 | (Intercept) | 0.744 | 0.053 | 13.970 | 0.000 *** |
| | KNO ₃ (10 mM) | 5 | (Intercept) | -9.086 | 3.191 | -2.848 | 0.019 * |
| | | | Sd_N | 0.277 | 0.094 | 2.953 | 0.016 * |
| | | | NO2_Sd | 0.003 | 0.002 | 1.619 | 0.140 |
| | | | NO3_Sd | 0.021 | 0.011 | 1.976 | 0.080 . |
| | | | C_Sd | -0.018 | 0.006 | -3.154 | 0.012 * |
| | | | CN_Sd | 0.572 | 0.188 | 3.041 | 0.014 * |
| | | 10 | (Intercept) | 0.577 | 0.049 | 11.870 | 0.000 *** |
| | | 15 | (Intercept) | 0.830 | 0.043 | 19.500 | 0.000 *** |
| | | 10/0 | (Intercept) | -0.291 | 0.321 | -0.909 | 0.380 |
| | | | CN_Sd | 0.030 | 0.020 | 1.548 | 0.146 |
| | | 15/5 | (Intercept) | 0.290 | 0.045 | 6.440 | 0.000 *** |
| | | 20/10 | (Intercept) | 0.808 | 0.059 | 13.650 | 0.000 *** |
| <i>P. coronopus</i> | Water | 5 | (Intercept) | -2.252 | 1.575 | -1.430 | 0.178 |
| | | | Sd_N | 0.061 | 0.034 | 1.782 | 0.100 |
| | | | NH4_Sd | 0.037 | 0.028 | 1.345 | 0.204 |
| | | 10 | (Intercept) | -1.020 | 1.101 | -0.926 | 0.371 |
| | | | Sd_N | 0.040 | 0.024 | 1.697 | 0.113 |
| | | 15 | (Intercept) | -161.176 | 104.131 | -1.548 | 0.150 |
| | | | Sd_N | 3.500 | 2.254 | 1.553 | 0.149 |
| | | | C_Sd | -0.339 | 0.222 | -1.526 | 0.155 |
| | | | CN_Sd | 15.633 | 10.194 | 1.534 | 0.153 |
| | | 10/0 | (Intercept) | -1.211 | 0.991 | -1.223 | 0.243 |
| | | | Sd_N | 0.044 | 0.021 | 2.062 | 0.060 . |

| | | | | | | | |
|--------------------------|-------|---------------|---------------|--------------|---------------|--------------|-----|
| KNO ₃ (10 mM) | | (Intercept) | -0.563 | 1.120 | -0.502 | 0.625 | |
| | | Sd_N | 0.044 | 0.035 | 1.269 | 0.231 | |
| | 20/10 | NH4_Sd | -0.068 | 0.030 | -2.295 | 0.042 | * |
| | | NO3_Sd | -0.047 | 0.026 | -1.788 | 0.101 | |
| | 5 | (Intercept) | -4.458 | 1.483 | -3.006 | 0.010 | * |
| | | C_Sd | 0.012 | 0.003 | 3.554 | 0.004 | ** |
| | 10 | (Intercept) | -3.022 | 1.021 | -2.960 | 0.012 | * |
| | | C_Sd | 0.010 | 0.002 | 5.567 | 0.000 | *** |
| | 15 | CN_Sd | -0.039 | 0.025 | -1.551 | 0.147 | |
| | | (Intercept) | 0.903 | 0.013 | 71.250 | <2e-16 | *** |
| | 10/0 | (Intercept) | -3.965 | 1.257 | -3.154 | 0.008 | ** |
| | | Sd_N | 0.033 | 0.017 | 1.954 | 0.074 | . |
| | 15/5 | C_Sd | 0.008 | 0.003 | 2.415 | 0.033 | * |
| | | (Intercept) | 41.903 | 9.449 | 4.435 | 0.001 | ** |
| | 20/10 | Sd_N | -1.250 | 0.265 | -4.726 | 0.001 | *** |
| | | NO3_Sd | 0.012 | 0.007 | 1.757 | 0.109 | |
| | | C_Sd | 0.091 | 0.017 | 5.251 | 0.000 | *** |
| | | CN_Sd | -2.991 | 0.619 | -4.836 | 0.001 | *** |
| | | (Intercept) | 3.596 | 1.762 | 2.041 | 0.062 | . |
| | | CN_Sd | -0.203 | 0.123 | -1.652 | 0.122 | |

| Species | Incubation | Temperature | Trait | Estimate | Std. Error | t value | Pr(> t) |
|----------------------|------------|-------------|---------------|---------------|--------------|---------------|--------------|
| <i>P. lanceolata</i> | Water | 5 | (Intercept) | 6.340 | 3.865 | 1.640 | 0.121 |
| | | | Sd_N | -0.104 | 0.062 | -1.682 | 0.112 |
| | | | NO2_Sd | 0.011 | 0.006 | 1.796 | 0.091 |
| | | | NO3_Sd | 0.074 | 0.036 | 2.075 | 0.055 |
| | | | CN_Sd | -0.203 | 0.128 | -1.589 | 0.132 |
| | | 10 | (Intercept) | 9.027 | 5.895 | 1.531 | 0.145 |
| | | | Sd_N | -0.137 | 0.095 | -1.449 | 0.167 |
| | | | NH4_Sd | -0.078 | 0.049 | -1.579 | 0.134 |
| | | | NO2_Sd | 0.021 | 0.009 | 2.250 | 0.039 |
| | | | CN_Sd | -0.283 | 0.194 | -1.457 | 0.165 |
| | | 15 | (Intercept) | 11.366 | 6.913 | 1.644 | 0.120 |
| | | | Sd_N | -0.173 | 0.111 | -1.556 | 0.139 |
| | | | NH4_Sd | -0.088 | 0.058 | -1.518 | 0.148 |
| | | | NO2_Sd | 0.021 | 0.011 | 1.856 | 0.082 |
| | | | CN_Sd | -0.357 | 0.227 | -1.570 | 0.136 |
| | | 10/0 | (Intercept) | 7.941 | 4.376 | 1.815 | 0.087 |
| | | | Sd_N | -0.128 | 0.070 | -1.832 | 0.085 |
| | | | NO2_Sd | 0.024 | 0.007 | 3.330 | 0.004 |
| | | | CN_Sd | -0.253 | 0.145 | -1.749 | 0.098 |
| | | 15/5 | (Intercept) | 0.229 | 0.089 | 2.558 | 0.019 |
| | | | NO2_Sd | 0.021 | 0.012 | 1.785 | 0.090 |
| | | 20/10 | (Intercept) | 16.741 | 7.066 | 2.369 | 0.031 |
| | | | Sd_N | -0.270 | 0.114 | -2.373 | 0.031 |
| | | | NH4_Sd | -0.085 | 0.059 | -1.438 | 0.170 |
| | | | NO2_Sd | -0.015 | 0.011 | -1.352 | 0.195 |

| | | | | | | | |
|--------------------------|-------|---------------|---------------|--------------|---------------|--------------|-----|
| KNO ₃ (10 mM) | 5 | CN_Sd | -0.498 | 0.232 | -2.142 | 0.048 | * |
| | | (Intercept) | 7.749 | 4.281 | 1.810 | 0.088 | . |
| | | NH4_Sd | -0.086 | 0.058 | -1.476 | 0.158 | |
| | | NO2_Sd | 0.021 | 0.009 | 2.315 | 0.033 | * |
| | | C_Sd | -0.016 | 0.009 | -1.751 | 0.098 | . |
| | 10 | (Intercept) | 0.736 | 0.034 | 21.880 | 0.000 | *** |
| | 15 | (Intercept) | 0.635 | 0.073 | 8.663 | 0.000 | *** |
| | | NH4_Sd | -0.065 | 0.043 | -1.509 | 0.149 | |
| | | NO2_Sd | 0.020 | 0.009 | 2.251 | 0.037 | * |
| | 10/0 | (Intercept) | 7.687 | 3.382 | 2.273 | 0.036 | * |
| | | NO2_Sd | 0.027 | 0.010 | 2.784 | 0.012 | * |
| | | C_Sd | -0.016 | 0.007 | -2.210 | 0.040 | * |
| | 15/5 | (Intercept) | 0.209 | 0.100 | 2.090 | 0.050 | . |
| | | NO2_Sd | 0.033 | 0.013 | 2.566 | 0.019 | * |
| | 20/10 | (Intercept) | 1.593 | 0.537 | 2.966 | 0.008 | ** |
| | | Sd_N | -0.033 | 0.019 | -1.692 | 0.107 | |

Table S5. GLM comparative analysis assessed the relationship between soil traits, and the temperature vs. germination response by each species in water and KNO₃ imbibition.

| Species | Incubation | Temperature | Trait | Estimate | Std. Error | t value | Pr(> t) |
|--------------------|------------|-------------|---------------|---------------|--------------|---------------|-----------------------|
| <i>P. albicans</i> | Water | 5 | (Intercept) | -0.035 | 0.026 | -1.334 | 0.215 |
| | | | NO2_So | -1.339 | 0.906 | -1.477 | 0.174 |
| | | | NH4_So | 0.046 | 0.017 | 2.719 | 0.024 * |
| | | | N_So | 0.025 | 0.010 | 2.395 | 0.040 * |
| | | | C_So | -0.001 | 0.001 | -1.799 | 0.105 |
| | | | CN_So | 0.001 | 0.000 | 4.720 | 0.001 ** |
| | | 10 | (Intercept) | 0.097 | 0.048 | 2.007 | 0.076 . |
| | | | NO2_So | -4.658 | 1.173 | -3.971 | 0.003 ** |
| | | | NO3_So | -0.044 | 0.017 | -2.646 | 0.027 * |
| | | | NH4_So | 0.166 | 0.026 | 6.449 | 0.000 *** |
| | | | N_So | 0.048 | 0.009 | 5.484 | 0.000 *** |
| | | | CN_So | 0.002 | 0.000 | 7.804 | <0.0000 *** |
| | | 15 | (Intercept) | 0.514 | 0.038 | 13.548 | 0.000 *** |
| | | | NO2_So | -1.565 | 0.990 | -1.581 | 0.148 |
| | | | NO3_So | -0.019 | 0.011 | -1.669 | 0.129 |
| | | | NH4_So | 0.030 | 0.016 | 1.877 | 0.093 . |
| | | | C_So | 0.003 | 0.000 | 7.025 | 0.000 *** |
| | | | CN_So | 0.000 | 0.000 | 2.274 | 0.049 * |
| | | 10/0 | (Intercept) | 0.105 | 0.019 | 5.627 | 0.000 *** |
| | | | CN_So | 0.001 | 0.000 | 6.002 | 0.000 *** |
| | | 15/5 | (Intercept) | 0.192 | 0.047 | 4.052 | 0.002 ** |
| | | | NO3_So | -0.059 | 0.013 | -4.437 | 0.001 *** |
| | | | NH4_So | 0.036 | 0.023 | 1.524 | 0.156 |
| | | | C_So | 0.002 | 0.000 | 4.685 | 0.001 *** |
| | | 20/10 | (Intercept) | 0.786 | 0.069 | 11.365 | 0.000 *** |
| | | | NO2_So | -3.685 | 1.938 | -1.901 | 0.084 . |
| | | | NO3_So | -0.062 | 0.018 | -3.462 | 0.005 ** |
| | | | NH4_So | 0.154 | 0.039 | 3.971 | 0.002 ** |
| | Nitrate | 5 | (Intercept) | 0.032 | 0.033 | 0.970 | 0.355 |
| | | | NO2_So | 1.071 | 0.733 | 1.461 | 0.175 |
| | | | NH4_So | -0.017 | 0.013 | -1.341 | 0.210 |
| | | | C_So | 0.000 | 0.000 | 1.544 | 0.154 |
| | | | CN_So | 0.001 | 0.000 | 4.412 | 0.001 ** |
| | | 10 | (Intercept) | 0.457 | 0.067 | 6.826 | 0.000 *** |
| | | | NO3_So | -0.052 | 0.017 | -3.005 | 0.011 * |
| | | | C_So | 0.003 | 0.001 | 4.458 | 0.001 *** |
| | | 15 | (Intercept) | 0.692 | 0.057 | 12.127 | 0.000 *** |
| | | | NO3_So | -0.038 | 0.015 | -2.558 | 0.025 * |
| | | | C_So | 0.003 | 0.001 | 4.621 | 0.001 *** |

| | | | | | | | | |
|---------------------|---------|-------|---------------|---------------|--------------|---------------|--------------|-----|
| <i>P. coronopus</i> | Water | 10/0 | (Intercept) | 0.180 | 0.048 | 3.741 | 0.003 | ** |
| | | | NO3_So | -0.020 | 0.012 | -1.674 | 0.122 | |
| | | | N_So | -0.012 | 0.009 | -1.322 | 0.213 | |
| | | | C_So | 0.001 | 0.001 | 2.549 | 0.027 | * |
| | | 15/5 | (Intercept) | 0.290 | 0.045 | 6.440 | 0.000 | *** |
| | | | (Intercept) | 0.936 | 0.086 | 10.859 | 0.000 | *** |
| | | | NO3_So | -0.039 | 0.021 | -1.846 | 0.092 | . |
| | | | N_So | -0.044 | 0.016 | -2.787 | 0.018 | * |
| | | 20/10 | C_So | 0.002 | 0.001 | 1.700 | 0.117 | |
| | | | (Intercept) | 0.897 | 0.146 | 6.147 | 0.000 | *** |
| | | | NO2_So | 12.128 | 6.087 | 1.992 | 0.070 | . |
| | | | NO3_So | -0.061 | 0.027 | -2.296 | 0.041 | * |
| | Nitrate | 10 | (Intercept) | 0.997 | 0.095 | 10.526 | 0.000 | *** |
| | | | NO2_So | 7.703 | 3.949 | 1.951 | 0.075 | . |
| | | | NO3_So | -0.044 | 0.017 | -2.537 | 0.026 | * |
| | | 15 | (Intercept) | 0.874 | 0.095 | 9.150 | 0.000 | *** |
| | | | NO2_So | 7.737 | 3.981 | 1.943 | 0.076 | . |
| | | | NO3_So | -0.030 | 0.017 | -1.720 | 0.111 | |
| | | 10/0 | (Intercept) | 1.983 | 0.768 | 2.582 | 0.030 | * |
| | | | NO2_So | 6.539 | 4.309 | 1.517 | 0.164 | |
| | | | NO3_So | -0.035 | 0.018 | -1.929 | 0.086 | . |
| | | | N_So | -0.443 | 0.335 | -1.324 | 0.218 | |
| | | 15/5 | C_So | 0.027 | 0.020 | 1.352 | 0.209 | |
| | | | CN_So | -0.063 | 0.044 | -1.441 | 0.184 | |
| | | | (Intercept) | 0.878 | 0.105 | 8.373 | 0.000 | *** |
| | | | NO2_So | 6.717 | 3.837 | 1.751 | 0.108 | |
| | | | NO3_So | -0.046 | 0.017 | -2.719 | 0.020 | * |
| | | | N_So | 0.025 | 0.019 | 1.317 | 0.215 | |
| | Nitrate | 20/10 | (Intercept) | 0.494 | 0.108 | 4.581 | 0.001 | *** |
| | | | N_So | 0.045 | 0.026 | 1.747 | 0.104 | |
| | | 5 | (Intercept) | 1.022 | 0.112 | 9.105 | 0.000 | *** |
| | | | NO2_So | 8.353 | 4.681 | 1.784 | 0.100 | . |
| | | | NO3_So | -0.052 | 0.020 | -2.561 | 0.025 | * |
| | | 10 | (Intercept) | 1.260 | 0.218 | 5.769 | 0.000 | *** |
| | | | NO2_So | 1.401 | 1.226 | 1.143 | 0.283 | |
| | | | NO3_So | -0.017 | 0.005 | -3.207 | 0.011 | * |
| | | | N_So | -0.109 | 0.095 | -1.145 | 0.282 | |
| | | 15 | C_So | 0.007 | 0.006 | 1.196 | 0.262 | |
| | | | CN_So | -0.015 | 0.012 | -1.187 | 0.266 | |
| | | | (Intercept) | 0.986 | 0.048 | 20.466 | 0.000 | *** |

| | | | | | | | |
|--|--------------|---------------|---------------|--------------|---------------|--------------|-----|
| | | NO2_So | 3.237 | 2.010 | 1.611 | 0.133 | |
| | | NO3_So | -0.021 | 0.009 | -2.394 | 0.034 | * |
| | | (Intercept) | 1.823 | 0.753 | 2.419 | 0.039 | * |
| | | NO2_So | 5.820 | 4.227 | 1.377 | 0.202 | |
| | 10/0 | NO3_So | -0.037 | 0.018 | -2.076 | 0.068 | . |
| | | N_So | -0.382 | 0.329 | -1.162 | 0.275 | |
| | | C_So | 0.023 | 0.019 | 1.202 | 0.260 | |
| | | (Intercept) | 1.519 | 0.214 | 7.089 | 0.000 | *** |
| | | NO3_So | -0.016 | 0.005 | -3.366 | 0.008 | ** |
| | 15/5 | NH4_So | 0.022 | 0.010 | 2.193 | 0.056 | . |
| | | N_So | -0.217 | 0.092 | -2.358 | 0.043 | * |
| | | C_So | 0.013 | 0.005 | 2.404 | 0.040 | * |
| | | CN_So | -0.036 | 0.012 | -2.890 | 0.018 | * |
| | | (Intercept) | 0.407 | 0.110 | 3.708 | 0.003 | ** |
| | 20/10 | N_So | 0.052 | 0.026 | 1.965 | 0.071 | . |

| Species | Incubation | Temperature | Trait | Estimate | Std. Error | t value | Pr(> t) |
|-------------------|------------|-------------|-------------|---------------|--------------|---------------|------------------|
| <i>P. lagopus</i> | Water | 5 | (Intercept) | 0.215 | 0.076 | 2.846 | 0.019 * |
| | | | NO2_So | -1.031 | 0.378 | -2.726 | 0.023 * |
| | | | NO3_So | 0.032 | 0.009 | 3.638 | 0.005 ** |
| | | | N_So | -0.045 | 0.007 | -6.963 | 0.000 *** |
| | | | C_So | 0.002 | 0.001 | 4.623 | 0.001 ** |
| | | | CN_So | -0.001 | 0.000 | -2.852 | 0.019 * |
| | | 10 | (Intercept) | 0.222 | 0.132 | 1.679 | 0.127 |
| | | | NO2_So | -1.365 | 0.812 | -1.682 | 0.127 |
| | | | NO3_So | 0.066 | 0.017 | 3.806 | 0.004 ** |
| | | | NH4_So | -0.039 | 0.028 | -1.381 | 0.201 |
| | | | N_So | -0.045 | 0.011 | -4.223 | 0.002 ** |
| | | 15 | (Intercept) | 0.384 | 0.094 | 4.087 | 0.002 ** |
| | | | NO2_So | -0.881 | 0.574 | -1.534 | 0.156 |
| | | | NO3_So | 0.033 | 0.011 | 2.918 | 0.015 * |
| | | | N_So | -0.043 | 0.008 | -5.710 | 0.000 *** |
| | | | C_So | 0.003 | 0.001 | 4.988 | 0.001 *** |
| | | 10/0 | (Intercept) | 0.273 | 0.101 | 2.709 | 0.024 * |
| | | | NO2_So | -0.807 | 0.503 | -1.606 | 0.143 |
| | | | NO3_So | 0.021 | 0.012 | 1.821 | 0.102 |
| | | | N_So | -0.066 | 0.009 | -7.571 | 0.000 *** |
| | | | C_So | 0.006 | 0.001 | 7.891 | 0.000 *** |
| | | | CN_So | -0.001 | 0.000 | -2.798 | 0.021 * |
| | | 15/5 | (Intercept) | 0.259 | 0.080 | 3.246 | 0.009 ** |
| | | | NO3_So | 0.030 | 0.010 | 2.954 | 0.014 * |

| | | | | | | | |
|---------|-------|-------------|---------------|--------------|----------------|--------------|-----|
| Nitrate | 20/10 | NH4_So | -0.029 | 0.021 | -1.383 | 0.197 | |
| | | N_So | -0.076 | 0.006 | -13.271 | 0.000 | *** |
| | | C_So | 0.004 | 0.001 | 8.172 | 0.000 | *** |
| | | (Intercept) | 0.653 | 0.063 | 10.300 | 0.000 | *** |
| | 5 | (Intercept) | 0.829 | 0.042 | 19.552 | 0.000 | *** |
| | | NO3_So | 0.017 | 0.006 | 3.079 | 0.010 | ** |
| | | N_So | -0.034 | 0.004 | -8.938 | 0.000 | *** |
| | 10 | (Intercept) | 1.089 | 0.040 | 26.951 | 0.000 | *** |
| | | NO2_So | 0.513 | 0.182 | 2.818 | 0.018 | * |
| | | NO3_So | -0.007 | 0.005 | -1.494 | 0.166 | |
| | | N_So | -0.036 | 0.003 | -11.222 | 0.000 | *** |
| | | CN_So | 0.000 | 0.000 | -2.085 | 0.064 | . |
| | 15 | (Intercept) | 0.952 | 0.021 | 44.537 | 0.000 | *** |
| | | N_So | 0.007 | 0.004 | 2.003 | 0.070 | . |
| | | C_So | -0.001 | 0.000 | -3.590 | 0.004 | ** |
| | | CN_So | 0.000 | 0.000 | 1.444 | 0.177 | |
| | 10/0 | (Intercept) | 0.871 | 0.066 | 13.202 | 0.000 | *** |
| | | NO3_So | 0.010 | 0.007 | 1.482 | 0.166 | |
| | | N_So | -0.035 | 0.005 | -7.566 | 0.000 | *** |
| | | C_So | 0.001 | 0.000 | 1.692 | 0.119 | |
| | 15/5 | (Intercept) | 0.827 | 0.041 | 20.175 | 0.000 | *** |
| | | NO3_So | 0.016 | 0.004 | 3.677 | 0.004 | ** |
| | | N_So | -0.034 | 0.003 | -11.561 | 0.000 | *** |
| | | C_So | 0.001 | 0.000 | 1.829 | 0.095 | . |
| | 20/10 | (Intercept) | 0.823 | 0.114 | 7.205 | 0.000 | *** |
| | | NO2_So | -1.869 | 1.167 | -1.602 | 0.133 | |

| Species | Incubation | Temperature | Trait | Estimate | Std. Error | t value | Pr(> t) |
|----------------------|------------|-------------|-------------|---------------|--------------|---------------|----------------|
| <i>P. lanceolata</i> | Water | 5 | (Intercept) | 0.144 | 0.040 | 3.618 | 0.002 ** |
| | | | NO2_So | -2.356 | 1.460 | -1.614 | 0.123 |
| | | 10 | (Intercept) | 0.629 | 0.066 | 9.524 | 0.000 *** |
| | | | NO3_So | -0.034 | 0.014 | -2.406 | 0.027 * |
| | | | CN_So | 0.003 | 0.002 | 1.543 | 0.140 |
| | | 15 | (Intercept) | 0.752 | 0.071 | 10.518 | 0.000 *** |
| | | | NO3_So | -0.042 | 0.015 | -2.704 | 0.015 * |
| | | | CN_So | 0.003 | 0.002 | 1.345 | 0.195 |
| | | 10/0 | NO2_So | -2.806 | 1.728 | -1.624 | 0.121 |
| | | | (Intercept) | 0.346 | 0.133 | 2.601 | 0.019 * |
| | | 15/5 | NO2_So | -4.700 | 2.318 | -2.027 | 0.060 . |
| | | | N_So | 0.159 | 0.067 | 2.366 | 0.031 * |
| | | | C_So | -0.010 | 0.003 | -2.889 | 0.011 * |

| | | | | | | | |
|---------|-------|-------------|---------------|--------------|---------------|--------------|-----|
| Nitrate | 20/10 | CN_So | 0.006 | 0.003 | 1.808 | 0.089 | . |
| | | (Intercept) | 1.072 | 0.152 | 7.064 | 0.000 | *** |
| | | NO3_So | -0.039 | 0.018 | -2.221 | 0.041 | * |
| | | N_So | -0.232 | 0.069 | -3.374 | 0.004 | ** |
| | | C_So | 0.012 | 0.004 | 3.345 | 0.004 | ** |
| | | CN_So | -0.006 | 0.003 | -1.621 | 0.125 | . |
| | 5 | (Intercept) | 0.343 | 0.041 | 8.319 | 0.000 | *** |
| | | (Intercept) | 0.735 | 0.090 | 8.178 | 0.000 | *** |
| | 10 | NO2_So | -2.101 | 1.622 | -1.295 | 0.215 | . |
| | | NO3_So | -0.015 | 0.012 | -1.246 | 0.232 | . |
| | | N_So | 0.087 | 0.044 | 1.978 | 0.067 | . |
| | | C_So | -0.004 | 0.002 | -1.903 | 0.076 | . |
| | | CN_So | 0.004 | 0.002 | 1.853 | 0.084 | . |
| | 15 | (Intercept) | 0.686 | 0.127 | 5.410 | 0.000 | *** |
| | | NO3_So | -0.025 | 0.015 | -1.719 | 0.105 | . |
| | | N_So | 0.101 | 0.057 | 1.767 | 0.096 | . |
| | | C_So | -0.005 | 0.003 | -1.805 | 0.090 | . |
| | | CN_So | 0.007 | 0.003 | 2.365 | 0.031 | * |
| | 10/0 | (Intercept) | 0.497 | 0.092 | 5.391 | 0.000 | *** |
| | | C_So | -0.003 | 0.002 | -1.801 | 0.088 | . |
| | 15/5 | (Intercept) | 0.376 | 0.157 | 2.394 | 0.029 | * |
| | | NO2_So | -5.680 | 2.737 | -2.075 | 0.054 | . |
| | | N_So | 0.207 | 0.079 | 2.612 | 0.019 | * |
| | | C_So | -0.012 | 0.004 | -3.115 | 0.007 | ** |
| | | CN_So | 0.008 | 0.004 | 2.043 | 0.058 | . |
| | 20/10 | (Intercept) | 0.842 | 0.131 | 6.405 | 0.000 | *** |
| | | NO2_So | -6.237 | 2.579 | -2.418 | 0.028 | * |
| | | NH4_So | -0.023 | 0.008 | -2.849 | 0.012 | * |
| | | N_So | -0.070 | 0.044 | -1.591 | 0.131 | . |
| | | C_So | 0.006 | 0.003 | 2.021 | 0.060 | . |