**Supplementary material**

**Table S1.** Analysis of variance of the a) chl a (% dw), b) chl b (% dw) and c) carotenoid content (% dw) of clonal and recombinant gametophytes (G) exposed to different temperature (T), nutrient concentrations (N) and densities (D) in a 12 week hatchery experiment. Means and SEM are presented in Figure 5.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | a) Chl a (% dw) | b) Chl b (% dw) | c) Carotenoids (% dw) |
| Source | df | MS | F | p | MS | F | p | MS | F | p |
| Gametophytes [G] | 1 | 0.01 | 20.11 | 0.000 | 0.00 | 0.72 | 0.405 | 0.00 | 51.38 | 0.000 |
| Temperature [T] | 1 | 0.03 | 49.79 | 0.000 | 0.03 | 52.67 | 0.000 | 0.01 | 66.69 | 0.000 |
| Nutrients [N] | 1 | 0.00 | 0.25 | 0.625 | 0.01 | 13.10 | 0.001 | 0.00 | 0.31 | 0.584 |
| Density [D] | 2 | 0.00 | 2.03 | 0.153 | 0.01 | 13.19 | 0.000 | 0.00 | 2.98 | 0.070 |
| G x T | 1 | 0.00 | 0.59 | 0.449 | 0.00 | 3.15 | 0.088 | 0.00 | 0.24 | 0.629 |
| G x N | 1 | 0.00 | 8.56 | 0.007 | 0.02 | 32.91 | 0.000 | 0.00 | 10.49 | 0.004 |
| G x D | 2 | 0.00 | 7.38 | 0.003 | 0.01 | 26.00 | 0.000 | 0.00 | 7.54 | 0.003 |
| T x N | 1 | 0.00 | 0.00 | 0.967 | 0.00 | 2.49 | 0.128 | 0.00 | 0.00 | 0.986 |
| T x D | 2 | 0.00 | 3.20 | 0.059 | 0.00 | 0.33 | 0.725 | 0.00 | 6.50 | 0.006 |
| N x D | 2 | 0.00 | 2.35 | 0.117 | 0.00 | 0.66 | 0.528 | 0.00 | 1.66 | 0.212 |
| G x T x N | 1 | 0.00 | 0.16 | 0.690 | 0.00 | 6.41 | 0.018 | 0.00 | 1.47 | 0.237 |
| G x T x D | 2 | 0.00 | 2.37 | 0.115 | 0.00 | 2.15 | 0.138 | 0.00 | 2.27 | 0.126 |
| G x N x D | 2 | 0.00 | 3.64 | 0.042 | 0.01 | 11.46 | 0.000 | 0.00 | 6.65 | 0.005 |
| T x N x D | 2 | 0.00 | 1.40 | 0.266 | 0.00 | 1.04 | 0.369 | 0.00 | 0.64 | 0.536 |
| G x T x N x D | 2 | 0.00 | 4.52 | 0.022 | 0.00 | 5.90 | 0.008 | 0.00 | 5.62 | 0.010 |
| Residual | 24 | 0.00 |  |  | 0.00 |  |  | 0.00 |  |  |