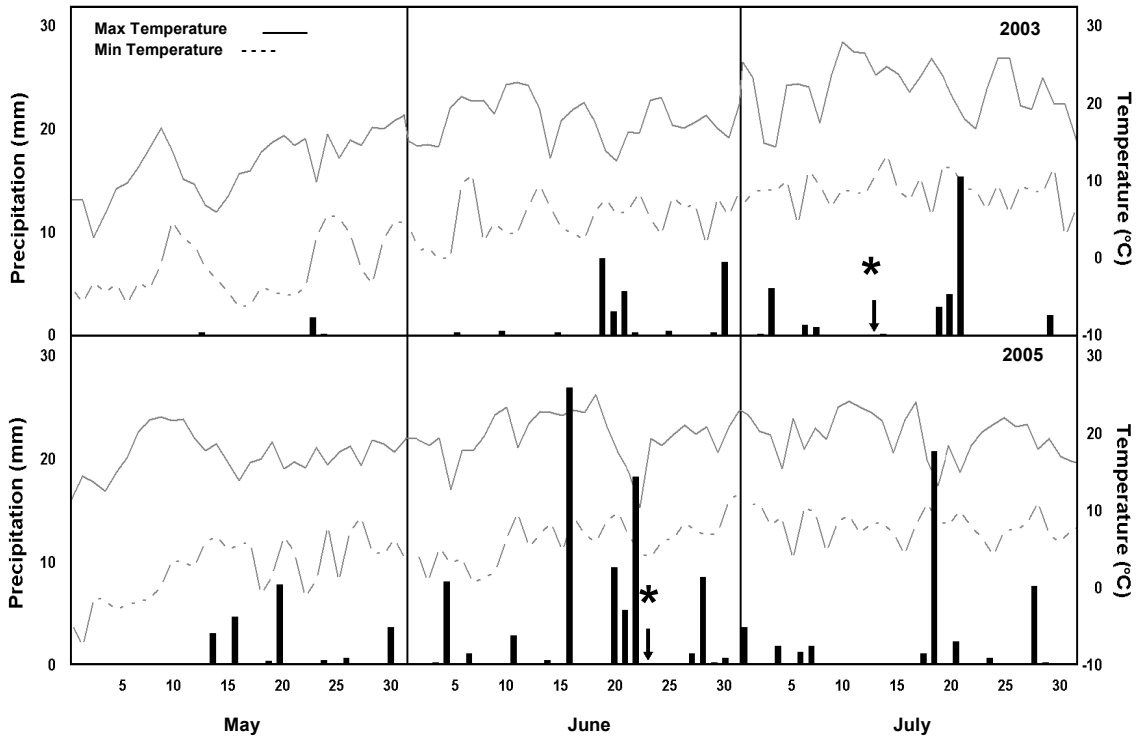
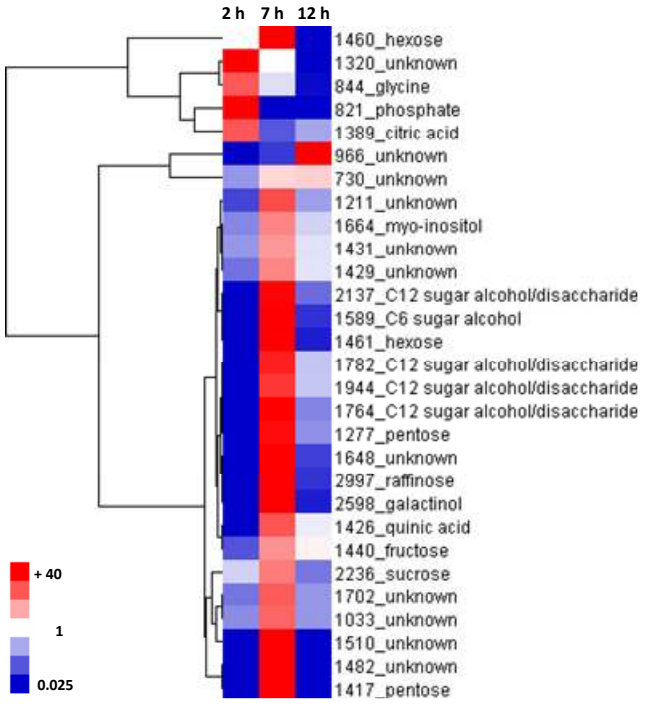



**Additional File 1: Supplemental Figure S1. Meteorological conditions near Yukon field site**

Data were taken from Environment Canada for the Whitehorse site and the months of May to July for 2003 and 2005 (http://www.climate.weatheroffice.ec.gc.ca/climate_normals/index e.html). Asterisks denote dates on which tissue was harvested from *Thellungiella* plants growing in the field.




**Additional File 1: Supplemental Figure S2. Analysis of metabolites showing differential abundance in field plants over the course of a day.** The mean of measurements from five individual plants harvested from the Yukon field site at 2 h, 7 h and 12 h from sun-rise were expressed as a ratio relative to the mean abundance for all three time-points. The fold ratios were then $\log_{10}$ transformed, subjected to HCA and presented as a heat map. MSTs whose levels were significantly different ($P<0.05$) at any time-point from the average of the day are illustrated. White indicates no difference between the mean MST abundance at a given time point and the daily average while red or blue indicates that the MST is present at significantly higher or lower levels, respectively, compared to the daily average. The values in the legend are fold differences compared to the daily average.

**Additional File 1: Supplemental Table S1.** Chemical analysis of Yukon soil and Yukon *Thellungiella* plants from field site and controlled environment chambers

| | Soil[a] | *Thellungiella*[b] | |
|---|---|---|---|
| | Field Site | Field Site | Chamber |
| pH | 8.3 | | |
| E.C. (dS $m^{-1}$) | 15.68 | | |
| Total C (%) | 2.61[c] | | |
| Total N (%) | 0.26[c] | 3.19 | 4.20 |
| Total S (%) | | 1.92 | 1.71 |
| **Ions (ppm)** | | | |
| $NH_4^+$ | 1[c] | | |
| $NO_3^-$ | 10[c] | | |
| P | 26[c] | 2800 | 9200 |
| $SO_4^{2-}$ | 9379 | | |
| K | 236 | 22300 | 43700 |
| Ca | 521 | 15800 | 10400 |
| Na | 2224 | 13630 | 2058 |
| Mg | 1456 | 6000 | 4200 |
| Fe | | 128 | 58 |
| Cu | | 5.6 | 19.4 |
| Zn | | 26 | 86 |
| Mn | | 34 | 86 |
| B | | 40 | 40 |
| Cl | 184 | | |

[a] soil paste unless otherwise specified
[b] mineral content based upon dry matter
[c]measurement on air dry soil as opposed to paste extract