

Table S1 Mean (\pm SE) values of height final, specific leaf area (SLA), leaf number, total biomass, root mass fraction (RMF) and leaf mass fraction (LMF) at the end of experiment of native and invasive species growing under nutrient, light and water treatments.

| Variables | Treat | Asteraceae | | Amaranthaceae | | Araliaceae | |
|------------------|---------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------|
| | | Invasive | Native | Invasive | Native | Invasive | Native |
| Height Final | Low nutrient | 125.3 \pm 8.13 | 108.9 \pm 5.37 | 86.2 \pm 7.27 | 43.5 \pm 9.26 | 91.2 \pm 7.52 | 41.8 \pm 7.28 |
| | High nutrient | 126.3 \pm 7.84 | 128.7 \pm 4.96 | 78.2 \pm 9.36 | 100.1 \pm 12.36 | 170.6 \pm 17.71 | 69.3 \pm 6.41 |
| | Low water | 73.5 \pm 3.49 | 76.3 \pm 5.07 | 52.7 \pm 2.42 | 45.5 \pm 6.20 | 89.6 \pm 10.02 | 56.1 \pm 2.25 |
| | High water | 89.9 \pm 4.09 | 93.7 \pm 6.83 | 64.5 \pm 5.43 | 61.3 \pm 8.00 | 92.3 \pm 8.88 | 72.2 \pm 5.48 |
| | Shading | 57.5 \pm 2.22 | 60.2 \pm 1.92 | 70.3 \pm 6.33 | 42.3 \pm 8.26 | 97.3 \pm 10.70 | 46.9 \pm 6.80 |
| | Ambient light | 119.9 \pm 15.57 | 132.7 \pm 6.92 | 134.3 \pm 5.21 | 99.7 \pm 9.73 | 109.2 \pm 8.66 | 68.8 \pm 8.21 |
| Leaf Number | Low nutrient | 238.1 \pm 23.73 | 190.6 \pm 18.37 | 223.6 \pm 34.68 | 206.0 \pm 50.81 | 43.4 \pm 5.99 | 16.3 \pm 5.57 |
| | High nutrient | 431.0 \pm 64.21 | 377.5 \pm 49.35 | 240.3 \pm 35.62 | 349.9 \pm 76.94 | 75.6 \pm 7.54 | 139.8 \pm 32.51 |
| | Low water | 146.8 \pm 10.22 | 137.3 \pm 6.89 | 161.9 \pm 17.47 | 101.6 \pm 12.55 | 26.0 \pm 2.11 | 86.1 \pm 8.95 |
| | High water | 227.6 \pm 12.67 | 195.8 \pm 14.34 | 219.4 \pm 26.34 | 180.3 \pm 16.92 | 42.3 \pm 3.16 | 157.3 \pm 17.97 |
| | Shading | 34.9 \pm 4.19 | 42.4 \pm 3.27 | 76.6 \pm 19.31 | 96.1 \pm 23.95 | 25.8 \pm 9.04 | 12.8 \pm 3.40 |
| | Ambient light | 325.8 \pm 31.00 | 360.6 \pm 40.82 | 719.9 \pm 49.72 | 530.5 \pm 91.34 | 64.3 \pm 7.17 | 56.9 \pm 19.38 |
| SLA | Low nutrient | 410.8 \pm 21.24 | 394.7 \pm 29.45 | 420.2 \pm 19.46 | 619.3 \pm 48.15 | 277.2 \pm 11.99 | 511.0 \pm 21.74 |
| | High nutrient | 413.2 \pm 29.99 | 424.2 \pm 13.76 | 448.5 \pm 16.66 | 412.9 \pm 42.31 | 255.7 \pm 11.88 | 533.3 \pm 20.58 |
| | Low water | 298.8 \pm 12.26 | 341.3 \pm 17.98 | 257.5 \pm 8.30 | 343.1 \pm 23.29 | 224.3 \pm 7.59 | 378.5 \pm 14.88 |
| | High water | 358.9 \pm 13.63 | 391.7 \pm 21.03 | 286.3 \pm 7.89 | 333.7 \pm 25.35 | 235.5 \pm 9.71 | 402.3 \pm 11.87 |
| | Shading | 633.2 \pm 33.68 | 612.3 \pm 19.76 | 602.5 \pm 30.68 | 680.2 \pm 50.18 | 408.7 \pm 7.05 | 1058.6 \pm 310.56 |
| | Ambient light | 428.8 \pm 15.56 | 475.7 \pm 20.47 | 388.8 \pm 17.37 | 460.8 \pm 36.75 | 266.3 \pm 7.98 | 520.8 \pm 23.64 |
| Total Biomass | Low nutrient | 5.6 \pm 0.90 | 3.9 \pm 0.41 | 4.8 \pm 0.93 | 3.7 \pm 1.30 | 3.7 \pm 0.59 | 0.2 \pm 0.05 |
| | High nutrient | 10.2 \pm 1.38 | 8.6 \pm 0.83 | 5.1 \pm 1.04 | 9.4 \pm 2.67 | 8.8 \pm 0.98 | 1.2 \pm 0.36 |
| | Low water | 3.9 \pm 0.27 | 3.9 \pm 0.33 | 4.4 \pm 0.20 | 2.8 \pm 0.39 | 3.1 \pm 0.41 | 1.6 \pm 0.23 |
| | High water | 5.9 \pm 0.19 | 5.0 \pm 0.29 | 6.3 \pm 0.19 | 4.6 \pm 0.62 | 3.8 \pm 0.37 | 2.5 \pm 0.33 |
| | Shading | 0.6 \pm 0.05 | 0.7 \pm 0.06 | 0.9 \pm 0.31 | 1.2 \pm 0.29 | 1.3 \pm 0.33 | 0.1 \pm 0.03 |
| | Ambient light | 8.5 \pm 0.63 | 7.9 \pm 1.04 | 16.9 \pm 1.22 | 14.2 \pm 2.53 | 7.3 \pm 0.97 | 0.5 \pm 0.18 |
| RMF | Low nutrient | 11.2 \pm 1.29 | 9.8 \pm 1.02 | 13.6 \pm 1.65 | 10.5 \pm 1.06 | 5.6 \pm 0.47 | 10.1 \pm 1.37 |
| | High nutrient | 5.7 \pm 0.59 | 6.7 \pm 0.73 | 7.1 \pm 0.59 | 7.0 \pm 1.07 | 2.9 \pm 0.23 | 4.9 \pm 1.31 |
| | Low water | 14.3 \pm 0.82 | 15.1 \pm 1.14 | 22.6 \pm 1.18 | 11.8 \pm 1.27 | 9.2 \pm 0.63 | 11.2 \pm 1.52 |
| | High water | 12.5 \pm 0.83 | 12.9 \pm 0.69 | 22.7 \pm 0.51 | 14.6 \pm 1.57 | 7.7 \pm 0.32 | 9.3 \pm 0.72 |
| | Shading | 5.7 \pm 0.70 | 6.4 \pm 0.75 | 5.9 \pm 1.21 | 5.9 \pm 1.05 | 2.6 \pm 0.25 | 7.4 \pm 2.31 |
| | Ambient light | 6.6 \pm 0.74 | 5.4 \pm 0.23 | 8.6 \pm 0.53 | 9.6 \pm 1.01 | 3.6 \pm 0.55 | 5.8 \pm 1.20 |
| LMF | Low nutrient | 33.2 \pm 1.91 | 36.5 \pm 0.93 | 29.6 \pm 2.01 | 36.4 \pm 2.69 | 56.9 \pm 2.42 | 30.0 \pm 4.81 |
| | High nutrient | 39.4 \pm 3.01 | 36.7 \pm 0.79 | 36.0 \pm 1.38 | 36.6 \pm 1.63 | 67.7 \pm 1.59 | 43.9 \pm 3.54 |
| | Low water | 29.8 \pm 0.83 | 28.7 \pm 2.74 | 20.3 \pm 1.64 | 34.9 \pm 4.43 | 38.9 \pm 1.37 | 36.5 \pm 3.36 |
| | High water | 29.5 \pm 0.59 | 30.5 \pm 1.26 | 22.1 \pm 0.68 | 29.3 \pm 2.49 | 44.8 \pm 2.52 | 36.9 \pm 1.55 |
| | Shading | 35.4 \pm 1.02 | 38.2 \pm 0.89 | 34.9 \pm 1.86 | 40.3 \pm 2.98 | 68.6 \pm 4.73 | 32.4 \pm 5.61 |
| | Ambient light | 34.9 \pm 0.63 | 37.7 \pm 0.69 | 33.1 \pm 0.42 | 30.8 \pm 1.38 | 60.3 \pm 2.17 | 44.2 \pm 3.61 |

Table S2 Phenotypic plasticity index of height final, specific leaf area (SLA), leaf number, total biomass, root mass fraction (RMF) and leaf mass fraction (LMF) of six species under nutrient, light and water treatments.

| Variables | Treat | Asteraceae | | Amaranthaceae | | Araliaceae | |
|---------------|----------|------------|--------|---------------|--------|------------|--------|
| | | Invasive | Native | Invasive | Native | Invasive | Native |
| Height Final | Nutrient | 0.008 | 0.154 | 0.093 | 0.566 | 0.465 | 0.397 |
| | Water | 0.182 | 0.186 | 0.184 | 0.258 | 0.030 | 0.223 |
| | Light | 0.521 | 0.546 | 0.477 | 0.576 | 0.109 | 0.317 |
| Leaf Number | Nutrient | 0.448 | 0.495 | 0.069 | 0.411 | 0.426 | 0.884 |
| | Water | 0.355 | 0.299 | 0.262 | 0.436 | 0.385 | 0.452 |
| | Light | 0.893 | 0.882 | 0.894 | 0.819 | 0.599 | 0.776 |
| SLA | Nutrient | 0.006 | 0.070 | 0.063 | 0.333 | 0.078 | 0.042 |
| | Water | 0.168 | 0.129 | 0.101 | 0.027 | 0.048 | 0.059 |
| | Light | 0.323 | 0.223 | 0.355 | 0.323 | 0.348 | 0.508 |
| Total Biomass | Nutrient | 0.450 | 0.549 | 0.060 | 0.601 | 0.582 | 0.872 |
| | Water | 0.321 | 0.203 | 0.299 | 0.384 | 0.171 | 0.348 |
| | Light | 0.935 | 0.913 | 0.942 | 0.918 | 0.822 | 0.796 |
| RMF | Nutrient | 0.491 | 0.317 | 0.477 | 0.328 | 0.487 | 0.516 |
| | Water | 0.127 | 0.151 | 0.003 | 0.189 | 0.164 | 0.175 |
| | Light | 0.128 | 0.160 | 0.312 | 0.384 | 0.259 | 0.213 |
| LMF | Nutrient | 0.158 | 0.004 | 0.179 | 0.006 | 0.159 | 0.317 |
| | Water | 0.010 | 0.058 | 0.081 | 0.161 | 0.130 | 0.011 |
| | Light | 0.012 | 0.011 | 0.050 | 0.236 | 0.120 | 0.268 |