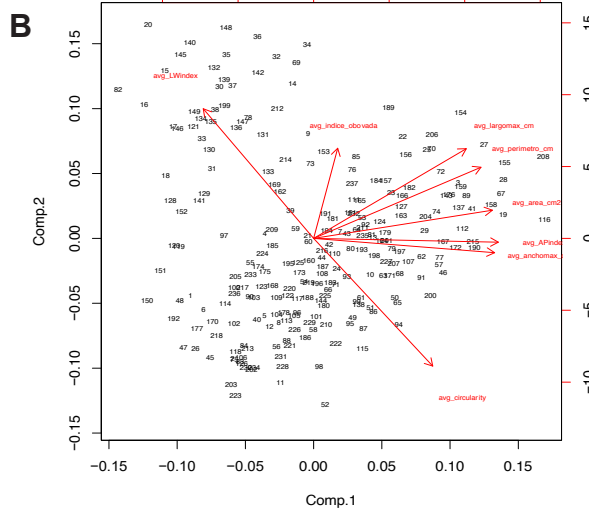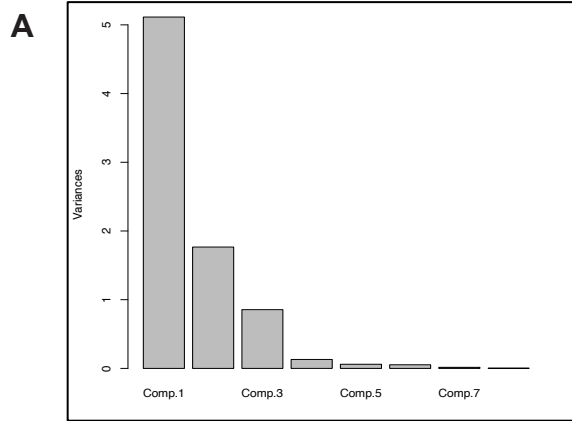**Supplementary file 5.** Principal Component Analysis (PCA) of foliar variation in *Euphorbia tithymaloides*.

**Supplementary file 5.1.** Loadings of the variables on the axis from a PCA on leaf morphology for *Euphorbia tithymaloides*.

| Variable | PC 1 | PC 2 | PC 3 | PC 4 | PC 5 | PC 6 | PC 7 | PC 8 |
|---|---|---|---|---|---|---|---|---|
| Lmax (cm) | 0.3628 | 0.3813 | 0.1669 | 0.4971 | 0.3949 | 0.0788 | 0.5299 | 0.0713 |
| Wmax (cm) | 0.4302 | -0.0607 | 0.0459 | -0.1852 | 0.1795 | -0.8495 | -0.0830 | -0.1188 |
| Area (cm$^2$) | 0.4248 | 0.1198 | 0.0885 | -0.3668 | -0.6193 | 0.1598 | 0.4153 | -0.2851 |
| Perimeter (cm) | 0.3977 | 0.3023 | 0.1213 | 0.2007 | -0.0049 | 0.2614 | -0.7020 | -0.3665 |
| Leaf aspect ratio (L/W) | -0.2622 | 0.5510 | 0.2414 | -0.6358 | 0.3939 | 0.0715 | 0.0086 | -0.0691 |
| A/P ratio | 0.4389 | -0.0162 | 0.0183 | -0.2595 | -0.0010 | 0.1846 | -0.1879 | 0.8185 |
| Obovate index | 0.0572 | 0.3831 | -0.9201 | -0.0405 | 0.0069 | -0.0387 | 0.0141 | -0.0034 |
| Circularity | 0.2830 | -0.5428 | -0.2056 | -0.2656 | 0.5226 | 0.3709 | 0.1065 | -0.3007 |
| Standard deviation | 2.2613 | 1.3290 | 0.9246 | 0.3608 | 0.2465 | 0.2321 | 0.1258 | 0.0679 |
| Proportion of variance | 0.6392 | 0.2208 | 0.1069 | 0.0163 | 0.0076 | 0.0067 | 0.0020 | 0.0006 |
| Cumulative proportion | 0.6392 | 0.8600 | 0.9669 | 0.9831 | 0.9907 | 0.9974 | 0.9994 | 1.0000 |



**Supplementary file 5.2. A**. Biplot showing cumulative variance across PCs. **B**. Space of morphological variation according to PC1 and PC2, with variables mapped onto it.