**Supplementary File 1**

Table S1.Plant species with the highest performance in monoculture for four soil response variables in four environmental contexts.

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| --- | --- | --- | --- | --- |
| Variable | Control | Elevated CO2 | Elevated Nitrogen (N) | Elevated CO2 + elevated N |
| Root biomass | *S. scoparium* | *B. gracilis* | *P. villosum* | *A. repens* |
| Soil respiration | *B. gracilis* | *A. repens* | *A. repens* | *S. rigida* |
| Soil microbial biomass | *S. scoparium* | *S. rigida* | *L. capitata* | *S. rigida* |
| Soil aggregate stability | *A. gerardi* | *S. scoparium* | *L. capitata* | *A. gerardi* |