**Table S1** Eight analyzed herbal species with their plant attributes

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Species name | Seed mass (mg) | Plant height (cm) | ANPP (2009) (kg) | Seed yield (2009) (g) | Reproductive allocation | Rhizome propagation |
| *Deschampsia cespitosa* | 0.29 | 90 | 1.25 | 36.89 | 0.035 | No |
| *Festuca kirilowii* | 0.58 | 89 | 1.23 | 38.29 | 0.036 | No |
| *Festuca kryloviana* | 0.56 | 96 | 0.90 | 42.58 | 0.039 | No |
| *Festuca sinensis* | 0.92 | 92 | 1.32 | 44.25 | 0.039 | No |
| *Poa crymophila* | 0.22 | 92 | 0.90 | 27.00 | 0.033 | No |
| *Poa pratensis* | 0.28 | 88 | 1.32 | 45.95 | 0.034 | Yes |
| *Koeleria cristata* | 0.29 | 86 | 1.08 | 49.25 | 0.043 | No |
| *Puccinellia tenuiflora* | 0.20 | 92 | 1.38 | 33.93 | 0.032 | No |

**Table S2** Results from linear models of relationship between ANPP and years since planting for each analyzed herbal species

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | *Deschampsia cespitosa* | *Festuca kirilowii* | *Festuca kryloviana* | *Festuca sinensis* | *Poa crymophila* | *Poa pratensis* | *Koeleria cristata* | *Puccinellia tenuiflora* |
| Intercept | 1.161 | 1.264 | 1.137 | 1.123 | 1.120 | 1.130 | 1.137 | 1.229 |
| *Slope* | -0.213 | -0.221 | -0.167 | -0.166 | -0.139 | -0.108 | -0.167 | -0.190 |
| *R*2 | 0.901 | 0.606 | 0.910 | 0.733 | 0.712 | 0.662 | 0.844 | 0.888 |
| *P* | <0.0001 | 0.0028 | <0.0001 | 0.0004 | 0.0006 | 0.0013 | <0.0001 | <0.0001 |

**Table S3** Results fromm linear models of relationship between seed yield and years since planting for each analyzed herbal species

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | *Deschampsia cespitosa* | *Festuca kirilowii* | *Festuca kryloviana* | *Festuca sinensis* | *Poa crymophila* | *Poa pratensis* | *Koeleria cristata* | *Puccinellia tenuiflora* |
| Intercept | 1.114 | 1.146 | 1.112 | 1.070 | 1.102 | 1.090 | 1.209 | 1.218 |
| Slope | -0.168 | -0.151 | -0.145 | -0.113 | -0.134 | -0.127 | -0.174 | -0.180 |
| *R*2 | 0.795 | 0.876 | 0.829 | 0.767 | 0.891 | 0.869 | 0.956 | 0.915 |
| *P* | <0.0001 | <0.0001 | <0.0001 | 0.0002 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |

**Table S4** Results from linear models of relationship between reproductive allocation and years since planting for each analyzed herbal species

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | *Deschampsia cespitosa* | *Festuca kirilowii* | *Festuca kryloviana* | *Festuca sinensis* | *Poa crymophila* | *Poa pratensis* | *Koeleria cristata* | *Puccinellia tenuiflora* |
| Intercept | 0.787 | 0.824 | 0.946 | 0.862 | 0.961 | 0.952 | 1.113 | 0.969 |
| Slope | 0.156 | 0.145 | 0.043 | 0.123 | 0.020 | -0.018 | -0.010 | 0.024 |
| *R*2 | 0.429 | 0.379 | 0.418 | 0.346 | 0.028 | 0.019 | 0.006 | 0.075 |
| *P* | **0.0208** | **0.0332** | **0.0231** | **0.0443** | 0.6010 | 0.6720 | 0.8120 | 0.3880 |

**Table S5** The effects of seed mass, plant height, reproductive allocation, ANPP (2009) and seed yield (2009) on *T*50 (ANPP)

|  |  |  |
| --- | --- | --- |
|  | Slope | *P* |
| Seed mass | -0.887 | 0.5226 |
| Plant height | -0.027 | 0.3053 |
| Reproductive allocation | -28.061 | 0.7662 |
| ANPP (2009) | 0.956 | 0.6029 |
| Seed yield (2009) | -0.017 | 0.7302 |

**Table S6** The effects of seed mass, plant height, reproductive allocation, ANPP (2009) and seed yield (2009) on *T*50 (seed yield)

|  |  |  |
| --- | --- | --- |
|  | Slope | P |
| Seed mass | 0.733 | 0.2880 |
| Plant height | -0.031 | 0.8663 |
| Reproductive allocation | 26.505 | 0.5805 |
| ANPP (2009) | 1.015 | 0.2609 |
| Seed yield (2009) | 0.019 | 0.4359 |

**Figure S1** Digital Elevation Map (DEM) of experimental site and China

