**Table S6** Correlation analysis between genetic diversity and climatic factors by Mantel test.

|  |  |  |
| --- | --- | --- |
|  | **overall** | **XJ** |
|  | GD | Hj | Ho | Ne | NPL | GD | Hj | Ho | Ne | NPL |
| Climate (all) | 0.6201\*\* | 0.2546 | 0.2528 | 0.2727 | 0.2126 | -0.4699  | 0.2469  | -0.2098  | 0.0108  | -0.3200 |
| AMT | 0.1747 | 0.0326 | -0.0135 | -0.0072 | -0.0536 | -0.9710\* | -0.0228  | -0.3100 | -0.4334  | -0.0293  |
| Alt | 0.4873\*\* | 0.1346 | 0.0809 | 0.0868 | 0.0549 | -0.8443  | -0.1956  | -0.0846  | -0.3466  | -0.0155  |
| MTW | 0.3345\*\* | 0.1429 | -0.0943 | -0.0738 | -0.1347 | -0.9307\* | -0.1709  | -0.3488  | -0.4853  | -0.3219  |
| MTC | -0.0111 | 0.1965 | -0.0790 | -0.0624 | -0.1181 | -0.9759\* | 0.0459  | -0.3611  | -0.3664  | -0.2321  |
| MTD | 0.6463\*\* | 0.4139\* | -0.0132 | -0.0085 | -0.0514 | -0.9249\* | 0.1217  | -0.2198  | -0.2780 | -0.2321  |
| PD | 0.3121\* | -0.1185 | 0.4354\*\* | 0.4241\*\* | 0.4676\*\* | -0.2203  | 0.3136  | 0.0866  | 0.2824  | -0.0417  |
| PC | 0.3752\* | -0.0875 | 0.4114\*\* | 0.4155\*\* | 0.4040\*\* | -0.2203  | 0.3136  | 0.0866  | 0.2824  | -0.0417  |
| MTmax | 0.2780\* | 0.1081 | -0.1060 | -0.0856 | -0.1456 | -0.9408\* | -0.1384  | -0.3369  | -0.4757  | -0.3107  |
| MTmin | 0.2458 | 0.1260 | -0.1520 | -0.1350 | -0.1855 | -0.9811\* | -0.9811\* | -0.3439  | -0.4514  | -0.3320\* |

|  |  |  |
| --- | --- | --- |
|  | **KZ** | **MGL** |
|  | GD | Hj | Ho | Ne | NPL | GD | Hj | Ho | Ne | NPL |
| Climate (all) | 0.2201 | 0.5055  | 0.3386  | 0.2685  | 0.4938  | 0.9968  | 0.9803  | 0.8636  | 0.8317  | 0.9236  |
| AMT | -0.2535 | -0.0517  | 0.5514  | 0.4958  | 0.6122  | 0.0208  | -0.2555  | -0.5548  | -0.6039  | -0.4379  |
| Alt | -0.0875  | -0.1186  | 0.7092  | 0.6344  | 0.7991  | 0.9749  | 0.9985  | 0.9271  | 0.9028  | 0.9691  |
| MTW | -0.0188  | -0.2846  | 0.7820 | 0.7287  | 0.8139  | 0.7615  | 0.5534  | 0.2540 | 0.1952  | 0.3817  |
| MTC | -0.0590 | 0.4452  | -0.3442  | -0.3953  | -0.1986  | 0.7829  | 0.5812  | 0.2864  | 0.2281  | 0.4126  |
| MTD | 0.3739  | -0.5073  | 0.9815  | 0.9331  | 0.9957  | 0.9439  | 0.8164  | 0.5855  | 0.5355  | 0.6892  |
| PD | -0.2314  | -0.1991  | 0.7155  | 0.6621  | 0.7585  | -0.7557  | -0.9069  | -0.9945  | -0.9990 | -0.9713  |
| PC | 0.1943  | -0.4625  | 0.4737  | 0.3780 | 0.5196  | -0.8660 | -0.9703  | -0.9964  | -0.9894  | -0.9988  |
| MTmax | -0.0939  | -0.2096  | 0.7182  | 0.6671  | 0.7561  | 0.7850 | 0.5839  | 0.2897  | 0.2314  | 0.4157  |
| MTmin | -0.0430 | -0.2752  | 0.7565  | 0.7007  | 0.7908  | 0.7808  | 0.5784  | 0.2832  | 0.2248  | 0.4095  |

Note: AMT, Annual mean temperature; MTW, Max temperature of warmest month; MTC, Mean temperature of coldest quarter; MTD, Mean temperature of driest quarter; PD, Precipitation of driest quarter; PC, Precipitation of coldest quarter; MTmax, Mean maximum temperature from May to August; MTmin, Mean minimum temperature from May to August; GD, Genetic distance; Climate (all), comprehensive climate, namely the combination of all climate factors. \* = *P* ＜ 0.05, \*\* = *P* ＜ 0.01.