Table 1. Location of study sites

|  |  |  |
| --- | --- | --- |
| Population  | Altitude | Geographical coordinates |
| Antarctic | 3 m a.s.l. | 62° 09´ 34'' S | 58° 28´ 25'' W |
| 3 m a.s.l. | 62° 09´ 35'' S | 58° 28´ 27'' W |
| 3 m a.s.l. | 62° 09´ 37'' S | 58° 28´ 23'' W |
| Tatra | 1140 m a.s.l. | 49° 18´ 18'' N | 19° 54´ 27'' E |
| 1127 m a.s.l. | 49° 18´ 20'' N | 19° 55´ 36'' E |
| 1097 m a.s.l. | 49° 18´ 23'' N | 19° 55´ 22'' E |
| Warsaw | 97 m a.s.l. | 52° 06´ 21'' N | 21° 05’ 44'' E |
| 95 m a.s.l. | 52° 06´ 33'' N | 21° 05´ 40'' E |
| 95 m a.s.l. | 52° 06´ 24'' N | 21° 05´ 40'' E |

Table 2. Location of weather stations

|  |  |  |
| --- | --- | --- |
| Station  | Altitude | Geographical coordinates |
| Ferraz | 20 m a.s.l. | 62° 05´ 07˝ S | 58° 23´ 33'' W |
| Hala Gąsienicowa | 1523 m a.s.l. | 49° 14´ 38˝ N | 20° 00´ 21˝ E |
| Zakopane  | 855 m a.s.l. | 49° 17´ 38˝ N | 19° 57´ 37˝ E |
| Warszawa  | 107 m a.s.l. | 52° 09' 46'' N | 20° 57´ 40˝ E |

Table 3. Individual trait comparison between studied populations. Letters a, b and c in the mean column indicate significant (P<0.02) differences between populations for a specific trait according to multiple comparison of mean ranks after Kruskal-Wallis test: a – indicates lowest value, b – intermediate, c – highest value

| Trait | Antarctic | Tatra | Warsaw |
| --- | --- | --- | --- |
| Mean | SD | Max | Min | Mean | SD | Max | Min | Mean | SD | Max | Min |
| Specimen height (cm) | 3.0a | 1.8 | 14.0 | 1.0 | 10.6b | 4.2 | 20.0 | 3.0 | 12.9c | 4.5 | 23.0 | 2.0 |
| Specimen width (cm) | 7.0a | 3.1 | 16.0 | 1.5 | 9.3b | 3.8 | 20.0 | 0.5 | 8.7a | 5.0 | 22.0 | 1.5 |
| Specimen height/width | 0.5a | 0.3 | 1.6 | 0.1 | 1.5b | 1.9 | 19.0 | 0.3 | 2.2c | 1.9 | 12.0 | 0.3 |
| Vegetative shoots No | 7.6b | 6.7 | 47 | 1 | 6.2b | 3.8 | 18 | 0 | 2.3a | 2.2 | 11 | 0 |
| Generative shoots No | 4.0b | 3.3 | 14 | 1 | 2.6a  | 2.1 | 14 | 1 | 2.8a | 2.0 | 11 | 1 |
| Generative shoots percent | 36a | 18 | 92 | 6 | 32a | 16 | 100 | 8 | 58b | 25 | 100 | 17 |
| Generative shoots length (cm) | 5.5a | 1.7 | 11.9 | 2.7 | 17.8b | 5.3 | 32.8 | 6.8 | 23.8c | 7.1 | 40.9 | 12.2 |
| Leaf blade length (cm) | 1.4a | 0.7 | 3.5 | 0.4 | 2.5b | 1.0 | 7.0 | 1.0 | 2.7b | 1.4 | 9.2 | 0.8 |
| Panicle length (cm) | 2.0a | 0.5 | 3.6 | 1.1 | 4.2b | 1.0 | 6.5 | 2.0 | 5.1c | 1.4 | 9.8 | 2.8 |
| Branches in panicle No | 5.7a | 2.1 | 13.3 | 3.0 | 13.2b | 2.2 | 18.0 | 8.0 | 12.1b | 2.7 | 19.0 | 6.0 |
| Panicle branch length (cm) | 1.1a | 0.3 | 1.8 | 0.6 | 2.3b | 0.6 | 4.3 | 1.1 | 2.7b | 0.8 | 6.0 | 1.2 |
| No of spikelets in panicle | 17.3a | 11.2 | 75.5 | 8.0 | 54.4b | 20.1 | 116.0 | 19.0 | 62.5b | 25.0 | 149.0 | 23.0 |