

competition and extensive natural selection, resulting in extremely rich genetic diversity. These resources constitute complex natural gene pools that harbor many superior genes for disease resistance, pest resistance, and drought tolerance that are often absent in cultivated varieties, and thus can be used to improve the genetic basis of cultivated varieties (Tao et al., 2010; Jing et al., 2020). Influenced by artificial cultivation practices and breeding strategies, cultivated varieties have undergone substantial evolutionary changes; however, the patterns and directions of their evolution show considerable similarity to those of wild populations under natural conditions (Xu, 2005). The construction of genetic populations of *P. orientalis* and the exploration of their genetic diversity are therefore of great significance for the conservation and utilization of *P. orientalis* germplasm resources (Lei, 2018).

3 Materials and Methods

3.1 Overview of experimental material collection

In March 2021, a total of 100 *Platycladus orientalis* samples were collected from four regions in Zaozhuang City (Table 5): Shanting District (a68), Yicheng District (b9), Shizhong District (c4), and Tengzhou City (d19). A sampling strategy of collecting one mature individual at intervals of 10 m was adopted to avoid repeated sampling. Healthy upper leaves free of insect damage were collected as samples whenever possible. After collection, the samples were thoroughly dried using color-indicating silica gel, and DNA was subsequently extracted.

Table 5 Geographical location of *Platycladus orientalis* sampling sites

No.	Group	Region	Locality	Longitude	Latitude	Elevation (m)	Aspect
2	a	Shanting District	Huameizhuang	117°32'24"	35°01'05"	360	South
3	a	Shanting District	Shifosi	117°36'26"	35°01'38"	360	South
4	a	Shanting District	Shifosi	117°36'28"	35°01'39"	370	South
5	a	Shanting District	Shifosi	117°36'28"	35°01'40"	370	Southwest
7	a	Shanting District	Shifosi	117°36'28"	35°01'40"	384	Southeast
8	a	Shanting District	Shifosi	117°36'31"	35°01'39"	360	Southeast
9	a	Shanting District	Shifosi	117°36'22"	35°01'42"	410	East
10	a	Shanting District	Shifosi	117°36'37"	35°01'36"	330	South
11	a	Shanting District	Shifosi	117°36'22"	35°01'42"	390	South
13	a	Shanting District	Shifosi	117°36'29"	35°01'34"	380	South
24	a	Shanting District	Shifosi	117°36'32"	35°01'49"	326	Southwest
25	a	Shanting District	Glass Walkway South Mountain	117°35'27"	35°02'04"	340	Northeast
26	a	Shanting District	Glass Walkway South Mountain	117°35'25"	35°02'12"	330	North
27	a	Shanting District	Glass Walkway South Mountain	117°35'24"	35°02'01"	360	Northwest
28	a	Shanting District	Glass Walkway South Mountain	117°35'31"	35°02'01"	360	Northeast
32	a	Shanting District	Glass Walkway South Mountain	117°35'35"	35°01'54"	390	East
35	a	Shanting District	Mujia Cave West Mountain	117°35'54"	35°02'36"	270	Southwest
36	a	Shanting District	Mujia Cave West Mountain	117°35'55"	35°01'52"	280	West
37	a	Shanting District	Mujia Cave West Mountain	117°35'03"	35°02'19"	270	Southwest
38	a	Shanting District	Mujia Cave West Mountain	117°33'57"	35°02'02"	270	Northwest
39	a	Shanting District	Mujia Cave West Mountain	117°34'54"	35°02'36"	270	Southwest
43	a	Shanting District	Mujia Cave West Mountain	117°34'54"	35°02'36"	280	Southwest
47	a	Shanting District	East Dami Mountain	117°34'26"	35°03'00"	370	Southeast
49	a	Shanting District	East Dami Mountain	117°38'27"	35°02'59"	360	Southeast
50	a	Shanting District	East Dami Mountain	117°38'26"	35°03'04"	390	Northwest
52	a	Shanting District	Dajiao Mountain	117°38'27"	35°03'38"	390	West
53	a	Shanting District	East Dajiao Mountain	117°38'26"	35°02'51"	400	Southeast
54	a	Shanting District	Dajiao Mountain	117°38'27"	35°03'10"	246	Southwest
55	a	Shanting District	East Dajiao Mountain	117°38'25"	35°02'50"	400	East
56	a	Shanting District	Dajiao Mountain	117°38'15"	35°03'29"	400	West
59	a	Shanting District	East Dajiao Mountain	117°38'25"	35°02'48"	400	East
63	a	Shanting District	East Dajiao Mountain	117°38'25"	35°02'47"	410	Southeast
64	a	Shanting District	Northwest Mountain	117°36'31"	35°03'45"	280	East