forests

Supplementary Materials

Fingerprinting Chinese Sweetgum (*Liquidambar formosana* Hance) Accessions and Constructing a Core Collection Using Newly Developed SSR Markers

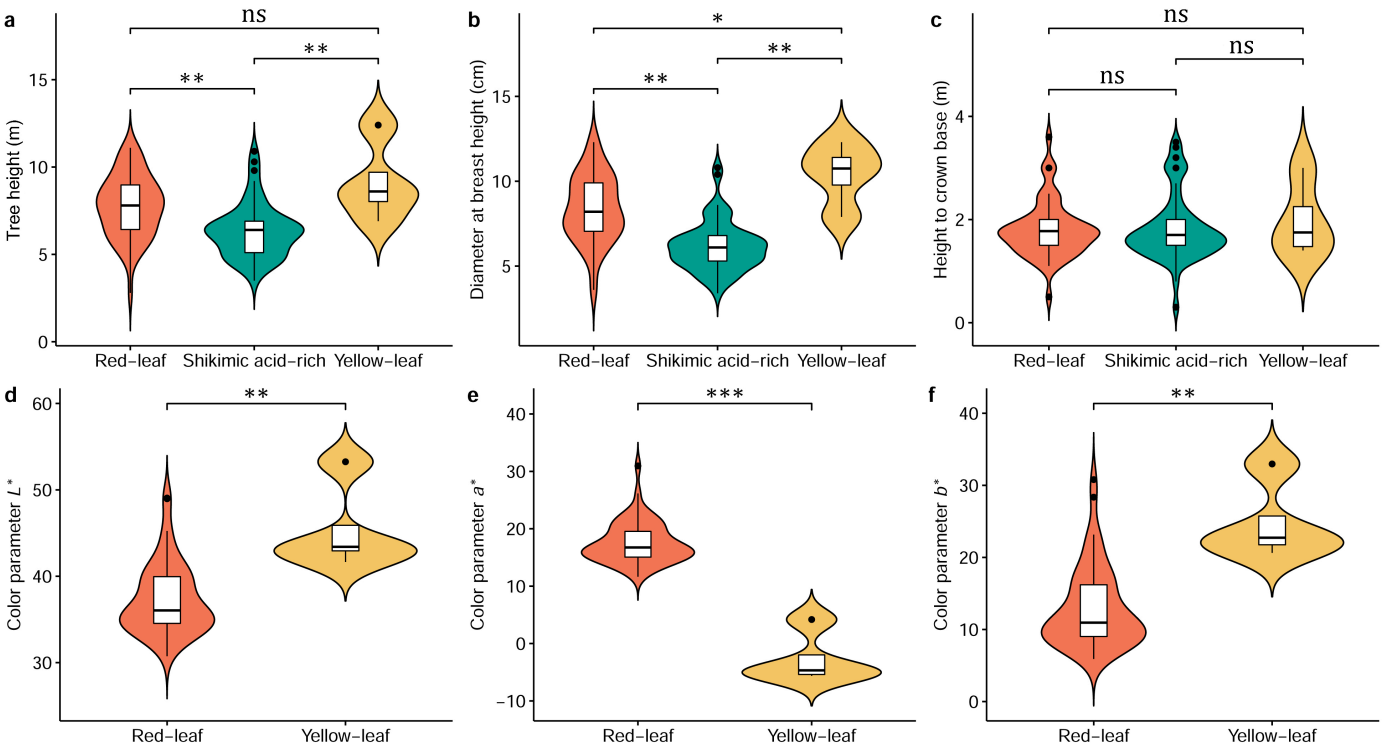


Figure S1. Differences in growth traits and leaf color parameters among the three types of superior accessions of *Liquidambar formosana*. (**a**) Tree height; (**b**) Diameter at breast height; (**c**) Height to crown base; (**d**) Color parameter *L**; (**e**) Color parameter *a**; (**f**) Color parameter *b**. All phenotypic data used in this analysis were sourced from the dataset provided by Dong et al. [9]. ns not significant; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

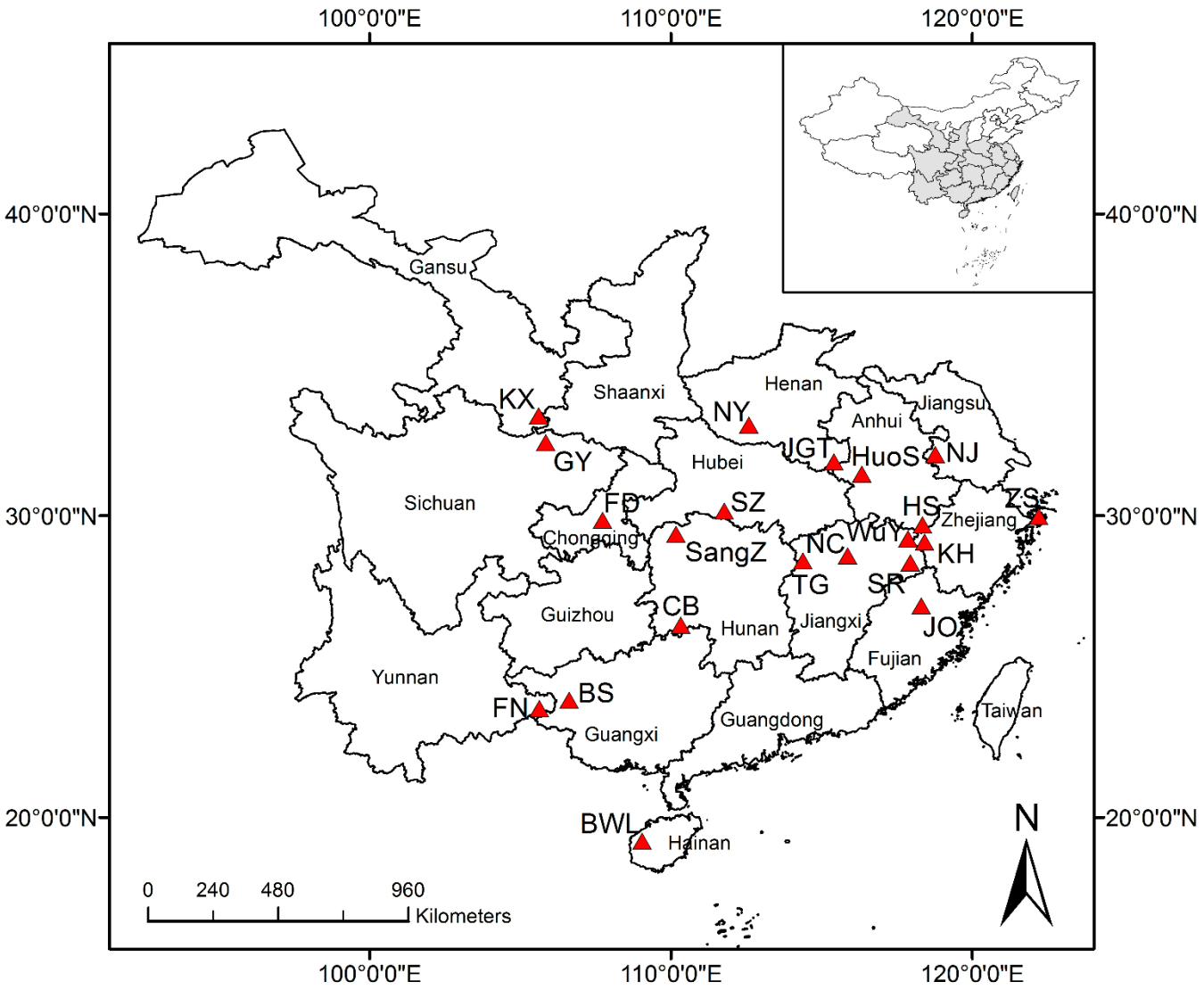


Figure S2. Geographical distribution of 21 *L. formosana* provenances. The location of each provenance is indicated by a red triangle, and the black lines represent administrative divisions among different provinces in China.

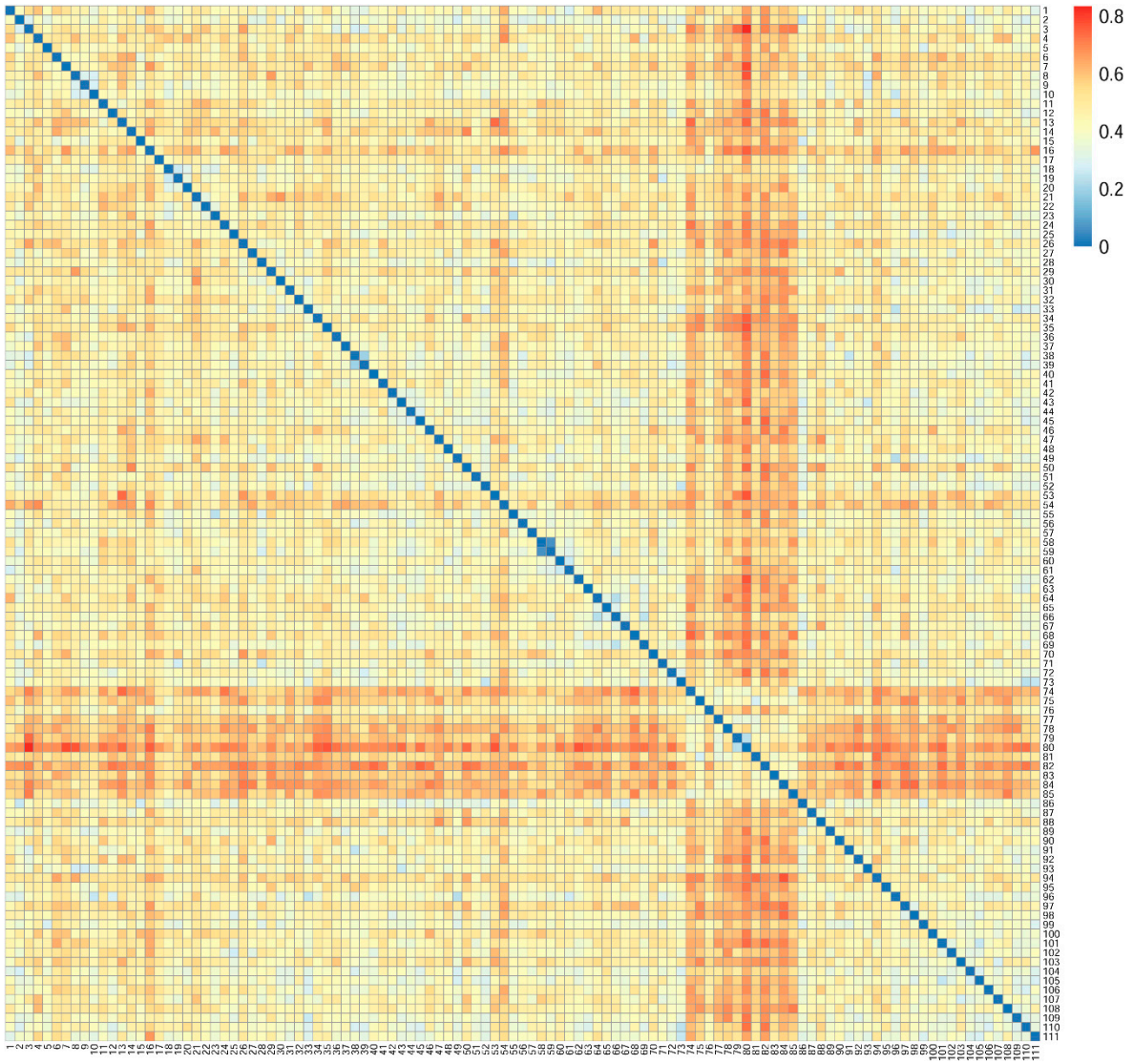


Figure S3. Nei's genetic distance matrix heatmap of 111 accessions of *L. formosana*. The relationship between numerical identifiers and accession names is provided in Table S1.

Table S1. DNA fingerprints of 111 accessions of *L. formosana* based on four core SSR markers.

Code	Accession Name	Provenance	Province	Germplasm Type	LF-eSSR4	LF-eSSR72	LF-eSSR80	LF-eSSR97	Core Collection
1	BS22-R	Baise	Guangxi	Red-leaf	156/162	290/302	242/248	237/237	
2	BWL1-R	Bawangling	Hainan	Red-leaf	150/156	278/296	251/251	237/237	
3	BWL7-R	Bawangling	Hainan	Red-leaf	147/147	278/296	236/248	237/237	
4	CB12-SA	Chengbu	Hunan	Shikimic acid-rich	156/159	287/290	245/251	228/246	
5	CB5-SA	Chengbu	Hunan	Shikimic acid-rich	150/156	275/290	236/251	237/255	
6	FD16-SA	Fengdu	Chongqing	Shikimic acid-rich	162/162	272/287	254/254	237/249	
7	FD28-SA	Fengdu	Chongqing	Shikimic acid-rich	156/165	272/296	254/254	252/252	
8	FD4-SA	Fengdu	Chongqing	Shikimic acid-rich	156/159	281/287	248/254	237/240	
9	FD5-SA	Fengdu	Chongqing	Shikimic acid-rich	147/150	281/287	242/254	237/252	
10	FD8-SA	Fengdu	Chongqing	Shikimic acid-rich	156/156	281/281	242/248	237/237	
11	FN14-SA	Funing	Yunnan	Shikimic acid-rich	156/165	275/290	248/251	228/237	C
12	FN21-R	Funing	Yunnan	Red-leaf	147/156	287/302	248/248	237/237	C
13	FN22-Y	Funing	Yunnan	Yellow-leaf	147/156	275/290	236/251	237/240	
14	FN26-Y	Funing	Yunnan	Yellow-leaf	147/156	272/275	245/248	228/237	
15	FN30-R	Funing	Yunnan	Red-leaf	150/150	272/287	251/254	240/252	
16	FN3-Y	Funing	Yunnan	Yellow-leaf	150/159	287/287	251/254	240/255	C
17	FN5-R	Funing	Yunnan	Red-leaf	150/162	287/287	236/248	237/255	
18	GY20-SA	Guangyuan	Sichuan	Shikimic acid-rich	147/156	302/302	236/236	237/237	
19	GY21-SA	Guangyuan	Sichuan	Shikimic acid-rich	156/156	275/302	236/251	237/237	
20	GY23-SA	Guangyuan	Sichuan	Shikimic acid-rich	147/150	302/302	236/236	237/237	C
21	GY27-SA	Guangyuan	Sichuan	Shikimic acid-rich	150/162	281/290	236/236	234/249	
22	GY28-SA	Guangyuan	Sichuan	Shikimic acid-rich	159/162	281/302	236/251	249/249	C
23	GY30-SA	Guangyuan	Sichuan	Shikimic acid-rich	150/156	287/302	236/236	237/237	C
24	GY4-SA	Guangyuan	Sichuan	Shikimic acid-rich	144/162	281/296	236/248	246/246	
25	HS11-R	Huangshan	Anhui	Red-leaf	153/153	290/290	236/236	228/246	
26	HS12-R	Huangshan	Anhui	Red-leaf	150/156	287/302	242/248	228/252	C
27	HS14-SA	Huangshan	Anhui	Shikimic acid-rich	150/156	287/287	242/251	228/228	
28	HS19-R	Huangshan	Anhui	Red-leaf	153/156	290/302	251/257	237/237	
29	HS21-SA	Huangshan	Anhui	Shikimic acid-rich	147/165	275/302	236/248	228/252	
30	HS23-R	Huangshan	Anhui	Red-leaf	156/156	287/302	248/251	237/237	
31	HS23-SA	Huangshan	Anhui	Shikimic acid-rich	153/165	302/302	248/257	237/252	

32	HS28-R	Huangshan	Anhui	Red-leaf	141/156	275/293	251/251	237/243	C
33	HS29-R	Huangshan	Anhui	Red-leaf	156/159	287/290	248/251	237/237	
34	HS30-R	Huangshan	Anhui	Red-leaf	156/156	278/290	248/254	228/228	
35	HuoS14-R	Huoshan	Anhui	Red-leaf	156/162	278/293	236/248	237/240	C
36	HuoS16-R	Huoshan	Anhui	Red-leaf	141/147	278/293	251/251	237/237	
37	HuoS20-R	Huoshan	Anhui	Red-leaf	156/162	281/302	236/245	237/240	
38	HuoS2-R	Huoshan	Anhui	Red-leaf	150/162	275/290	236/248	237/237	
39	HuoS2-SA	Huoshan	Anhui	Shikimic acid-rich	153/162	281/287	236/248	237/237	
40	HuoS32-R	Huoshan	Anhui	Red-leaf	159/162	275/287	233/251	228/228	
41	JGT19-R	Jingangtai	Henan	Red-leaf	162/162	302/302	245/251	237/246	C
42	JO12-SA	Jianou	Fujian	Shikimic acid-rich	156/165	290/302	242/254	237/240	
43	JO17-SA	Jianou	Fujian	Shikimic acid-rich	150/156	278/302	236/254	237/252	
44	JO20-R	Jianou	Fujian	Red-leaf	150/156	290/290	233/263	237/240	
45	JO21-R	Jianou	Fujian	Red-leaf	150/162	290/302	248/263	237/240	C
46	JO23-R	Jianou	Fujian	Red-leaf	150/156	302/302	248/260	234/240	C
47	KH12-SA	Kaihua	Zhejiang	Shikimic acid-rich	156/156	287/290	242/245	237/237	
48	KH13-R	Kaihua	Zhejiang	Red-leaf	156/171	275/281	242/251	237/237	C
49	KH21-SA	Kaihua	Zhejiang	Shikimic acid-rich	150/156	302/302	248/251	237/237	
50	KH22-R	Kaihua	Zhejiang	Red-leaf	150/150	281/290	251/251	237/240	
51	KH29-R	Kaihua	Zhejiang	Red-leaf	147/153	290/302	236/251	237/240	C
52	KH9-SA	Kaihua	Zhejiang	Shikimic acid-rich	159/159	281/302	245/251	237/237	
53	KX11-SA	kangxian	Gansu	Shikimic acid-rich	147/159	293/302	254/254	237/237	
54	KX13-SA	kangxian	Gansu	Shikimic acid-rich	147/150	281/290	236/254	261/261	C
55	KX21-SA	kangxian	Gansu	Shikimic acid-rich	156/162	290/302	236/251	237/237	
56	KX23-SA	kangxian	Gansu	Shikimic acid-rich	150/162	290/290	236/245	237/237	
57	KX25-SA	kangxian	Gansu	Shikimic acid-rich	156/156	275/302	245/245	234/237	
58	KX8-SA	kangxian	Gansu	Shikimic acid-rich	150/153	281/290	254/254	246/246	
59	KX9-SA	kangxian	Gansu	Shikimic acid-rich	150/153	281/290	254/254	237/237	
60	NC-R	Nanchang	Jiangxi	Red-leaf	141/162	275/281	242/254	237/240	
61	NC-SA	Nanchang	Jiangxi	Shikimic acid-rich	156/162	290/290	242/254	237/240	
62	NJ11-SA	Nanjing	Jiangsu	Shikimic acid-rich	156/156	275/290	239/257	237/237	
63	NJ12-R	Nanjing	Jiangsu	Red-leaf	156/156	287/290	239/251	240/246	
64	NJ13-R	Nanjing	Jiangsu	Red-leaf	150/156	275/275	239/251	249/249	
65	NJ14-R	Nanjing	Jiangsu	Red-leaf	162/162	290/302	239/257	249/249	C

66	NJ19-R	Nanjing	Jiangsu	Red-leaf	150/156	275/275	239/248	237/249	
67	NJ21-SA	Nanjing	Jiangsu	Shikimic acid-rich	156/156	275/290	236/248	237/237	
68	NJ24-R	Nanjing	Jiangsu	Red-leaf	150/156	278/302	239/248	237/237	
69	NJ3-R	Nanjing	Jiangsu	Red-leaf	150/156	290/290	239/248	228/228	
70	NJ5-R	Nanjing	Jiangsu	Red-leaf	147/159	281/290	236/254	237/237	C
71	NJ6-R	Nanjing	Jiangsu	Red-leaf	153/153	290/293	251/251	237/237	
72	NY29-SA	Nanyang	Henan	Shikimic acid-rich	147/165	287/293	248/272	228/237	C
73	NY8-SA	Nanyang	Henan	Shikimic acid-rich	156/159	281/287	248/251	237/246	
74	SangZ10-SA	Sangzhi	Hunan	Shikimic acid-rich	141/144	284/287	242/266	237/237	C
75	SangZ11-SA	Sangzhi	Hunan	Shikimic acid-rich	147/150	269/281	236/251	237/237	
76	SangZ15-R	Sangzhi	Hunan	Red-leaf	150/162	281/287	242/251	237/237	
77	SangZ16-SA	Sangzhi	Hunan	Shikimic acid-rich	141/150	281/293	251/266	237/237	C
78	SangZ18-SA	Sangzhi	Hunan	Shikimic acid-rich	138/141	266/281	242/248	237/240	C
79	SangZ1-SA	Sangzhi	Hunan	Shikimic acid-rich	144/150	281/281	251/251	237/237	C
80	SangZ24-SA	Sangzhi	Hunan	Shikimic acid-rich	144/150	281/302	245/251	237/237	C
81	SangZ27-SA	Sangzhi	Hunan	Shikimic acid-rich	144/150	269/281	248/251	237/240	
82	SangZ4-SA	Sangzhi	Hunan	Shikimic acid-rich	147/156	281/281	254/254	237/237	C
83	SangZ5-SA	Sangzhi	Hunan	Shikimic acid-rich	150/156	275/281	248/251	231/237	C
84	SangZ8-SA	Sangzhi	Hunan	Shikimic acid-rich	138/138	269/281	254/266	237/237	C
85	SangZ9-SA	Sangzhi	Hunan	Shikimic acid-rich	156/156	281/287	248/251	237/237	
86	SR-R	Shangrao	Jiangxi	Red-leaf	150/156	302/302	236/251	237/240	C
87	SZ12-SA	Songzi	Hubei	Shikimic acid-rich	147/150	272/302	239/248	237/237	C
88	SZ17-SA	Songzi	Hubei	Shikimic acid-rich	150/159	281/302	248/248	228/249	
89	SZ18-Y	Songzi	Hubei	Yellow-leaf	150/156	287/290	236/245	237/252	C
90	SZ5-R	Songzi	Hubei	Red-leaf	150/156	287/290	236/248	237/237	
91	TG18-SA	Tonggu	Jiangxi	Shikimic acid-rich	147/156	275/278	236/236	237/237	
92	TG28-R	Tonggu	Jiangxi	Red-leaf	162/162	287/302	233/236	237/240	C
93	TG2-SA	Tonggu	Jiangxi	Shikimic acid-rich	147/156	275/287	248/254	237/252	
94	WuY14-R	Wuyuan	Jiangxi	Red-leaf	147/156	275/290	236/242	228/228	
95	WuY1-SA	Wuyuan	Jiangxi	Shikimic acid-rich	156/156	278/302	233/248	255/255	
96	WuY20-R	Wuyuan	Jiangxi	Red-leaf	156/156	290/302	242/248	237/237	
97	WuY22-R	Wuyuan	Jiangxi	Red-leaf	144/162	287/302	242/242	228/228	C
98	WuY22-SA	Wuyuan	Jiangxi	Shikimic acid-rich	144/156	302/302	242/254	228/228	
99	WuY26-R	Wuyuan	Jiangxi	Red-leaf	150/156	290/302	236/251	237/237	

100	ZS15-R	Zhoushan	Zhejiang	Red-leaf	156/162	275/281	248/269	237/237	C
101	ZS17-R	Zhoushan	Zhejiang	Red-leaf	156/156	290/302	236/269	228/234	
102	ZS1-R	Zhoushan	Zhejiang	Red-leaf	156/162	281/290	236/251	228/252	C
103	ZS21-R	Zhoushan	Zhejiang	Red-leaf	156/162	275/302	236/248	228/255	
104	ZS25-R	Zhoushan	Zhejiang	Red-leaf	150/156	275/278	248/248	237/237	
105	ZS26-R	Zhoushan	Zhejiang	Red-leaf	156/159	302/302	248/248	228/237	
106	ZS28-R	Zhoushan	Zhejiang	Red-leaf	156/156	293/302	236/251	237/237	C
107	ZS29-R	Zhoushan	Zhejiang	Red-leaf	156/156	302/302	248/248	228/237	
108	ZS31-R	Zhoushan	Zhejiang	Red-leaf	144/147	278/287	236/254	240/240	
109	ZS34-R	Zhoushan	Zhejiang	Red-leaf	144/156	287/290	236/251	237/255	
110	ZS35-R	Zhoushan	Zhejiang	Red-leaf	156/162	287/290	248/251	237/237	
111	ZS36-R	Zhoushan	Zhejiang	Red-leaf	156/156	281/302	248/248	237/237	

C The 34 accessions included in the core collection.

Table S2. Evaluation of the transferability of 24 newly developed EST-SSR markers in related Altingiaceae and Hamamelidaceae species.

Locus	*Altingia chinensis*	*Semiliquidambar cathayensis*	*Corylopsis multiflora*	*Distylium chinense*	*Exbucklandia tonkinensis*	*Loropetalum chinense*	*Loropetalum Chinense* var. *rubrum*	*Loropetalum subcordatum*	*Mytilaria laosensis*	*Rhodoleia championii*	Total Species
LF-eSSR4	+	+	−	+	−	−	+	+	+	+	7
LF-eSSR5	+	+	−	−	−	−	−	−	−	−	2
LF-eSSR12	+	+	−	−	−	−	−	−	−	−	2
LF-eSSR18	+	+	−	+	−	−	+	+	−	−	5
LF-eSSR24	+	+	−	+	−	−	+	+	+	−	6
LF-eSSR25	+	+	−	+	−	+	+	+	+	+	8
LF-eSSR29	+	+	−	+	−	+	+	+	+	−	7
LF-eSSR35	+	+	−	+	−	−	+	+	−	−	5
LF-eSSR38	+	+	−	−	−	−	−	−	−	−	2
LF-eSSR39	+	+	−	+	−	−	−	+	+	−	5
LF-eSSR49	+	+	−	+	−	−	+	+	−	−	5
LF-eSSR50	+	+	+	+	−	−	−	−	+	−	5
LF-eSSR55	+	+	+	+	+	+	+	+	+	+	10
LF-eSSR59	+	+	−	+	−	+	+	+	+	+	8
LF-eSSR70	+	+	−	+	−	−	+	+	+	+	7
LF-eSSR72	+	+	−	+	−	−	+	+	+	−	6

LF-eSSR79	+	+	−	+	+	+	+	+	+	+	9
LF-eSSR80	+	+	−	+	−	−	+	+	+	+	7
LF-eSSR91	+	+	−	+	−	−	−	+	−	−	4
LF-eSSR92	+	+	−	+	−	−	+	+	−	−	5
LF-eSSR94	+	+	−	+	−	−	+	+	−	−	5
LF-eSSR95	+	+	−	+	−	−	+	+	−	−	5
LF-eSSR97	+	+	−	+	−	−	+	+	+	+	7
LF-eSSR100	+	+	−	+	−	−	+	+	+	−	6
No. of loci	24	24	2	21	2	5	18	20	14	8	/

+ successful PCR amplification; − failed PCR amplification.