

Supplementary Materials

Table S1. The evaluation and generalized value of candidate trees to select *T. amurensis* plus tree.

Population	ID	Height	DBH	HD_{35y}^2	STF	AD	AE	$GVI_{p,i}$	$GVI_{t,i}$	$GVI_{w,i}$
IY I	IY I-01	11	28.7	0.0207	4	4	5	-0.7805	-0.3656	-0.6560
	IY I-02	17	42.3	0.0455	4.5	4.5	5	0.4367	0.5585	0.4733
	IY I-03	14	20.4	0.0205	5	4.5	5	0.2439	0.4318	0.3003
	IY I-04	16	20	0.0123	5	5	4.5	0.1313	0.3054	0.1835
	IY I-05	15	22.4	0.0232	4	4.5	4.5	-0.6360	-0.3023	-0.5359
	IY I-06	18	23.8	0.0111	4	4.5	3	-1.3127	-0.9617	-1.2074
	IY I-07	20	33.3	0.0253	5	4.7	5	0.4440	0.5835	0.4858
	IY I-08	20	41.4	0.0362	5	5	4.7	0.7569	0.7885	0.7664
	IY I-09	16	24.9	0.0489	5	4.5	4.5	0.7981	0.7875	0.7949
	IY I-10	17	23.7	0.0350	4	4	4.5	-0.5642	-0.2593	-0.4727
	IY I-11	17	22	0.0225	5	5	5	0.5048	0.6344	0.5437
	Average	16.5	27.5	0.0274	4.6	4.6	4.6			
IY II	IY II-1	14	20	0.0069	4	4.3	4	-0.9690	-0.8063	-0.9202
	IY II-2	19	30.9	0.0223	5	4.7	5	0.6325	0.5301	0.6018
	IY II-3	18	31	0.0313	5	4.5	5	0.8895	0.6242	0.8099
	IY II-4	16	20.5	0.0131	3	4	4	-1.3925	-1.4303	-1.4038
	IY II-5	19	38.2	0.0267	5	5	4.5	0.7699	0.5614	0.7073
	IY II-6	18	24.3	0.0141	5	4.3	5	0.1521	0.2514	0.1819
	IY II-7	21	27.4	0.0162	4	4.5	4	-0.5318	-0.5744	-0.5445
	IY II-8	21	27.1	0.0160	5	5	4.7	0.4287	0.4304	0.4292
	Average	18.3	27.4	0.0183	4.5	4.5	4.5			
IY III	IY III-1	16	25.3	0.0110	4	4.5	4	-1.3439	-0.6664	-1.1406
	IY III-2	18	39.8	0.0350	5	4.7	5	0.7540	0.7566	0.7548
	IY III-3	18	30	0.0348	4.5	5	5	0.5138	0.5365	0.5206
	IY III-4	20	25.5	0.0202	5	5	4.8	0.3755	0.5349	0.4233
	IY III-5	18	29.3	0.0183	5	4.5	4	-0.2543	0.0974	-0.1488
	IY III-6	20	27.5	0.0250	4	5	4	-0.5567	-0.2504	-0.4648
	IY III-7	19	30.3	0.0282	5	5	4.5	0.5508	0.5878	0.5619
	Average	18.4	29.7	0.0247	4.6	4.8	4.5			
IJ	IJ-01	18	30.8	0.0200	4	5	4	-0.6320	-0.3403	-0.5444
	IJ-02	17	24.8	0.0122	4	3	4	-1.1372	-1.1452	-1.1396
	IJ-03	20	30.9	0.0157	5	5	4	0.1965	0.2176	0.2028
	IJ-04	21	40.7	0.0293	5	5	5	0.5822	0.7560	0.6343
	IJ-05	19	28.8	0.0128	4.5	5	4	-0.2676	-0.1512	-0.2327
	IJ-06	18	39.8	0.0240	4.5	4	3	-0.6228	-0.5814	-0.6104
	IJ-07	21	43.5	0.0550	5	5	4.7	0.7588	1.1217	0.8677
	IJ-08	18	33.2	0.0232	4	5	4	-0.6001	-0.2829	-0.5050
	IJ-09	21	41.5	0.0520	5	4	5	0.5907	0.8245	0.6609
	IJ-10	23	45.2	0.1110	5	5	4	1.1340	1.9087	1.3664
	Average	19.6	35.9	0.0355	4.6	4.6	4.2			
IB	IB-01	16	29	0.0133	4.5	5	5	-0.0451	0.1541	0.0147
	IB-02	17	22	0.0134	4.5	4	4	-0.2771	-0.4739	-0.3361
	IB-03	17	20.3	0.0136	5	4	4.5	-0.0724	-0.0048	-0.0521
	IB-04	17	25.9	0.0204	5	5	4.7	0.1340	0.5081	0.2462
	IB-05	20	41.6	0.0538	5	5	4.5	0.4436	1.0420	0.6231
	IB-06	16	24.4	0.0205	4	4.5	4	-0.2924	-0.4982	-0.3541
	IB-07	18	33.8	0.0203	5	4.5	5	0.1107	0.4285	0.2060
	Average	17.3	28.1	0.0222	4.7	4.6	4.5			
HM	HM-01	12	20	0.0052	4	4.5	5	-0.5624	-0.4738	-0.5358
	HM-02	14	23.5	0.0039	5	4.5	5	0.2163	0.1377	0.1927

	HM-03	15	24.5	0.0111	4	4.5	4.5	-0.3449	-0.5172	-0.3966
	HM-04	17	33	0.0097	4.5	5	5	0.3667	0.0901	0.2837
	HM-05	16	28.8	0.0177	4	5	5	0.5183	-0.0845	0.3374
	HM-06	13	28	0.0116	4.5	4	5	0.1800	-0.2098	0.0630
	HM-07	14	33.4	0.0126	5	4.5	5	0.8526	0.2920	0.6844
	HM-08	13	30.2	0.0063	4	3.5	4	-1.2318	-1.0830	-1.1872
	HM-09	15	23.5	0.0075	4	4	4.5	-0.7657	-0.7465	-0.7599
	HM-10	17	24	0.0116	5	4.5	5	0.7808	0.2746	0.6289
	Average	14.6	26.9	0.0097	4.4	4.4	4.8			
HC	HC-01	20	36.6	0.0230	5	5	4.5	0.5793	0.4959	0.5543
	HC-02	17	31.9	0.0240	5	4	5	0.3984	0.3279	0.3773
	HC-03	15	22.8	0.0132	4.5	4	4	-0.6202	-0.4780	-0.5776
	HC-04	19	28.1	0.0200	4	5	4.5	-0.4050	-0.1917	-0.3410
	HC-05	15	22.5	0.0109	4	5	4.5	-0.6417	-0.3527	-0.5550
	HC-06	15	22.9	0.0100	4	4	4.5	-1.0153	-0.7038	-0.9219
	HC-07	18	34	0.0294	4	4.5	3	-0.7568	-0.6356	-0.7205
	HC-08	16	22.5	0.0212	5	4.5	5	0.4985	0.4445	0.4823
	HC-09	15	20.9	0.0111	4.5	4	4.5	-0.5338	-0.3672	-0.4838
	HC-10	18	34.4	0.0210	5	4	5	0.3198	0.2744	0.3062
	HC-11	16	30.6	0.0577	5	4.5	5	1.4504	1.0919	1.3428
	HC-12	17	25.6	0.0181	5	5	4.7	0.5081	0.4684	0.4962
	HC-13	17	24.7	0.0175	5	4	5	0.2283	0.2122	0.2235
	HC-14	16	22.5	0.0166	4.5	4	4.5	-0.3886	-0.2685	-0.3526
	HC-15	17	24.8	0.0174	5	4.5	5	0.4003	0.3777	0.3935
	Average	16.7	27	0.0207	4.6	4.4	4.6			
PD I	PD I-01	16	41	0.0102	3	5	5	-0.5142	-0.8510	-0.6153
	PD I-02	18	41.3	0.0288	3	5	5	-0.0407	-0.5205	-0.1846
	PD I-03	16	46.5	0.0332	3	5	5	0.0698	-0.4435	-0.0842
	PD I-04	17	25.2	0.0088	4.5	5	5	0.0681	0.0753	0.0703
	PD I-05	18	30	0.0160	5	5	4	0.2435	0.2227	0.2372
	PD I-06	16	34.8	0.0130	3.5	5	4	-0.4509	-0.7818	-0.5502
	PD I-07	21	41	0.0095	3	5	4	-0.7434	-1.1592	-0.8681
	PD I-08	15	60.5	0.0194	5	5	3	0.1177	-0.0133	0.0784
	PD I-09	13	23.5	0.0310	5	4	5	0.4807	0.4509	0.4718
	PD I-10	18	28	0.0423	5	4	5	0.7695	0.6525	0.7344
	Average	16.8	37.2	0.0212	4	4.8	4.5			
PD II	PD II-8	12	30	0.0197	4.5	4.5	5	0.0202	0.1013	0.0445
	PD II-9	14	25.4	0.0084	4	4.5	5	-1.0911	-0.4157	-0.8885
	PD II-10	17	28.7	0.0107	5	5	4.5	0.1412	0.2764	0.1818
	PD II-11	17	26	0.0133	4.5	5	5	-0.1180	0.1548	-0.0362
	PD II-12	19	29.8	0.0176	5	5	4	0.2982	0.2510	0.2840
	PD II-13	22	31.6	0.0205	5	5	5	0.7962	0.5994	0.7371
	PD II-14	21	39.4	0.0275	5	4	5	0.7912	0.3895	0.6707
	PD II-15	17	25.3	0.0153	4.5	4	4	-0.7198	-0.4399	-0.6358
	PD II-16	21	26.3	0.0123	5	4	5	0.0536	0.1190	0.0732
	PD II-17	18	21.5	0.0073	5	4.5	4.5	-0.1929	0.0498	-0.1201
	Average	17.8	28.4	0.0153	4.8	4.6	4.7			
PD III	PD III-01	16	19.8	0.0179	5	4	4.5	0.2491	0.0715	0.1958
	PD III-02	11	18.6	0.0128	4	4	5	-0.5869	-0.5046	-0.5623
	PD III-03	14	22	0.0141	5	4.5	4.5	0.2560	0.1704	0.2303
	PD III-04	13	24	0.0165	5	5	4.5	0.5231	0.3800	0.4802
	PD III-05	16	28.3	0.0316	5	5	4.5	1.1538	0.6485	1.0022
	PD III-06	9	17.8	0.0119	4.5	4.5	4	-0.4732	-0.3336	-0.4313
	PD III-07	8	22.4	0.0104	4	4	4	-1.1227	-0.8439	-1.0390
	Average	12.4	21.8	0.0165	4.6	4.4	4.4			
PY I	PY I-01	15	24.3	0.0125	4.5	3	4.5	-0.8089	-0.6761	-0.7691
	PY I-02	17	38.9	0.0132	3.5	4	4.5	-1.4062	-0.9629	-1.2732

	PY I-03	16	25.2	0.0203	5	4.5	5	0.9268	0.4277	0.7771
	PY I-04	17	32.5	0.0205	5	4.7	5	0.9985	0.4982	0.8484
	PY I-05	18	34.5	0.0160	4.7	4.5	5	0.3013	0.1619	0.2595
	PY I-06	18	37.3	0.0131	5	5	4.8	0.3918	0.4083	0.3967
	PY I-07	19	33.8	0.0190	5	4.5	5	0.8279	0.4061	0.7013
	PY I-08	16	30.3	0.0148	4.5	5	4.5	-0.0741	0.0325	-0.0421
	PY I-09	16	31.5	0.0143	5	4.7	5	0.4977	0.3886	0.4649
	PY I-10	14	31.5	0.0103	4.5	4	4.5	-0.7113	-0.3808	-0.6121
	PY I-11	16	27.5	0.0104	4.7	4.5	5	-0.1507	0.0630	-0.0866
	PY I-12	15	19.5	0.0102	4.5	4.7	4	-0.7558	-0.2970	-0.6182
	Average	16.4	30.6	0.0145	4.7	4.4	4.7			
PY II	PY II-01	9.5	26	0.0032	4.5	4.5	4	-0.9876	-0.4888	-0.8379
	PY II-02	13	37.9	0.0093	4	4	4.5	-1.0820	-0.7162	-0.9723
	PY II-03	12	26	0.0094	4.7	5	5	0.2821	0.2120	0.2611
	PY II-04	14	33.8	0.0155	4	5	5	-0.0467	-0.1231	-0.0697
	PY II-05	13	24.6	0.0073	5	4.5	5	0.2556	0.1976	0.2382
	PY II-06	15	31.1	0.0098	4.7	4.5	5	0.1090	0.0524	0.0920
	PY II-07	16	33.8	0.0142	5	5	5	0.9073	0.4874	0.7814
	PY II-08	16	26.6	0.0094	5	5	4.5	0.3669	0.2541	0.3331
	PY II-09	14	26.7	0.0050	4.7	5	4.5	-0.2298	-0.0135	-0.1649
	PY II-10	16	37	0.0183	4.5	4.5	5	0.4565	0.0767	0.3425
	PY II-11	18	35.7	0.0116	4	4.5	4.5	-0.7308	-0.5081	-0.6640
	PY II-12	17	24.9	0.0107	4.5	4	5	-0.2407	-0.2255	-0.2361
	PY II-13	18	29	0.0182	5	5	4.5	0.9401	0.4100	0.7811
	Average	14.7	30.2	0.0109	4.6	4.7	4.7			
GM	GM-01	17	21.3	0.0138	5	4.5	5	0.3979	0.3131	0.3725
	GM-02	18	20.6	0.0176	4	4.5	4	-0.4407	-0.5495	-0.4733
	GM-03	15	20.5	0.0110	5	4.5	4	-0.1158	-0.0322	-0.0907
	GM-04	16	19.6	0.0110	5	4.5	5	0.1552	0.2635	0.1877
	GM-05	16	20.8	0.0085	5	5	4	0.0014	0.0900	0.0280
	Average	16.4	20.6	0.0124	4.8	4.6	4.4			
JB	JB-01	13	24.1	0.0230	5	5	5	0.6564	0.6442	0.6528
	JB-02	14	20.7	0.0146	5	4	4	-0.3423	-0.1352	-0.2802
	JB-03	16	29.8	0.0248	4.5	5	5	0.5123	0.3592	0.4664
	JB-04	16	30.4	0.0241	4.7	5	5	0.5676	0.4724	0.5390
	JB-05	11	18.4	0.0131	3	4	4	-1.3855	-1.4300	-1.3989
	Average	14	24.7	0.0199	4.4	4.6	4.6			
TS	TS-01	9	15.1	0.0067	4	5	5	-0.1020	-0.2804	-0.1555
	TS-02	12	16.1	0.0069	4	5	5	-0.0837	-0.2756	-0.1413
	TS-03	10	17.5	0.0141	3	5	3	-0.5080	-1.3743	-0.7679
	TS-04	16	25.8	0.0179	4	5	5	0.6629	-0.0805	0.4399
	TS-05	17	19	0.0096	5	4	5	0.1381	0.0712	0.1181
	TS-06	15	19	0.0148	5	5	4.7	0.9350	0.4090	0.7772
	TS-07	10	17.5	0.0068	4	5	5	-0.0910	-0.2775	-0.1469
	TS-08	12	20.1	0.0127	4	5	4	0.1212	-0.4696	-0.0560
	TS-09	16	20.5	0.0148	4.7	5	5	0.8262	0.3070	0.6704
	TS-10	11	18.8	0.0082	3	5	3	-0.9091	-1.4791	-1.0801
	TS-11	8	16.8	0.0042	3	5	4	-0.9924	-1.2533	-1.0707
	Average	12.4	18.7	0.0106	4	4.9	4.4			
TH	TH-01	19	30.5	0.0344	5	3.7	5	0.0560	0.4113	0.1626
	TH-02	21	22.1	0.0232	5	4	5	0.0325	0.3133	0.1168
	TH-03	26	32.4	0.0296	5	5	5	0.3905	0.7605	0.5015
	TH-04	26	37	0.0260	5	4	5	0.0601	0.3622	0.1507
	TH-05	27	43.5	0.1245	5	4.7	5	1.2517	2.3447	1.5796
	TH-06	28	28.2	0.0166	5	4	5	-0.0334	0.1963	0.0355
	TH-07	28	23.6	0.0217	4	5	5	-0.1903	-0.0141	-0.1374
	TH-08	16	22.3	0.0367	3	5	4	-0.9289	-0.6778	-0.8536

	TH-09	17	16.6	0.0089	3	5	4	-1.2063	-1.1699	-1.1954
	TH-10	27	25.3	0.0187	4	5	4.7	-0.3357	-0.1548	-0.2814
	TH-11	29	36.2	0.0481	5	5	5	0.5752	1.0880	0.7290
	TH-12	25	24.4	0.0383	5	4.5	5	0.3302	0.7474	0.4554
	Average	24.1	28.5	0.0356	4.5	4.6	4.8			
YS	YS-01	23	40	0.0323	5	4.7	5	0.3634	0.7075	0.4666
	YS-02	16	37.7	0.0203	5	5	4	0.0745	0.2998	0.1421
	YS-03	14	20	0.0074	3	5	4	-0.9049	-1.1969	-0.9925
	YS-04	16	53.3	0.0532	4	4	4	-0.5025	-0.0851	-0.3773
	YS-05	23	57.5	0.1230	5	5	4.7	0.9697	2.3282	1.3772
	Average	18.4	41.7	0.0472	4.4	4.7	4.3			
YC	YC-01	12	26.8	0.0126	4	4	4.5	-0.6463	-0.6575	-0.6496
	YC-02	16	34	0.0234	5	4	5	0.4737	0.3166	0.4266
	YC-03	17	34.2	0.0297	4.5	5	5	0.7721	0.4460	0.6743
	YC-04	17	31	0.0115	4	4	4	-0.8465	-0.8247	-0.8400
	YC-05	20	26	0.0188	5	4.5	5	0.4494	0.4017	0.4351
	YC-06	17	32	0.0153	5	5	5	0.4681	0.5061	0.4795
	YC-07	19	36	0.0292	3	4	4	-0.6817	-1.1441	-0.8204
	Average	16.9	31.4	0.0201	4.4	4.4	4.6			
MG	MG-01	15	22	0.0122	4	4.5	4	-0.4765	-0.6448	-0.5270
	MG-02	13	20	0.0120	4	4.5	5	-0.1929	-0.3520	-0.2406
	MG-03	14	26.8	0.0221	5	4	5	0.5021	0.2931	0.4394
	MG-04	15	29.8	0.0268	5	5	5	1.0715	0.7108	0.9633
	MG-05	12	21.5	0.0096	4	4.5	4	-0.5721	-0.6918	-0.6080
	MG-06	15	28.3	0.0284	3	4	5	-0.3323	-0.8624	-0.4913
	Average	14	24.7	0.0185	4.2	4.4	4.7			
MS	MS-01	11	31.5	0.0185	4	5	5	0.5265	-0.0703	0.3475
	MS-02	12	17.8	0.0067	3	4	5	-0.7985	-1.2481	-0.9334
	MS-03	16	25	0.0181	5	5	4	0.6314	0.2604	0.5201
	MS-04	13	24.2	0.0083	3	5	4	-0.7101	-1.1820	-0.8517
	MS-05	15	28.4	0.0132	5	4	5	0.3628	0.1362	0.2948
	Average	13.4	25.4	0.0129	4	4.6	4.6			
Total	Average	16.64	28.45	0.0204	4.47	4.6	4.6			