Features		LCD				
		V6	V8	V11	V16	R1
GLCM	ASM_B1	0.337	0.203	0.097	-0.360	-0.206
	ASM_B2	0.458	0.249	0.387	-0.074	0.007
	ASM_B3	0.393	0.081	-0.292	-0.287	-0.167
	ASM_B4	0.347	0.271	0.384	0.038	0.158
	ASM_B5	-0.017	0.284	0.381	0.014	0.118
	Con_B1	-0.468	-0.250	-0.032	0.239	0.222
	Con_B2	-0.527	-0.243	-0.217	-0.030	0.075
	Con_B3	-0.461	-0.191	0.328	0.151	0.178
	Con_B4	-0.427	-0.273	-0.215	-0.176	-0.034
	Con_B5	0.096	-0.270	-0.085	-0.341	-0.134
	Cor_B1	0.160	0.059	-0.097	0.171	0.108
	Cor_B2	0.097	0.203	0.045	0.039	-0.209
	Cor_B3	0.153	0.097	0.489	0.264	0.182
	Cor_B4	0.166	0.320	0.151	0.150	-0.200
	Cor_B5	0.266	0.362	0.520	0.375	-0.010
	Dis_B1	-0.439	-0.247	-0.039	0.272	0.198
	Dis_B2	-0.510	-0.247	-0.246	-0.008	0.028
	Dis_B3	-0.458	-0.185	0.347	0.191	0.171
	Dis_B4	-0.386	-0.272	-0.236	-0.135	-0.071
	Dis_B5	0.069	-0.273	-0.122	-0.243	-0.156
	Ent_B1	-0.362	-0.219	-0.080	0.324	0.188
	Ent_B2	-0.476	-0.244	-0.364	0.044	-0.023
	Ent_B3	-0.422	-0.131	0.361	0.254	0.168
	Ent_B4	-0.348	-0.272	-0.347	-0.035	-0.141
	Ent_B5	0.021	-0.273	-0.305	-0.034	-0.115
	Hom_B1	0.396	0.242	0.074	-0.290	-0.177
	Hom_B2	0.484	0.251	0.318	-0.022	0.016
	Hom_B3	0.460	0.163	-0.344	-0.227	-0.158
	Hom_B4	0.329	0.274	0.298	0.057	0.121
	Hom_B5	-0.032	0.271	0.238	0.083	0.152
	MEAN_B1	-0.374	-0.195	0.405	0.229	-0.367
	MEAN_B2	-0.437	-0.168	0.130	0.057	0.241
	MEAN_B3	-0.373	-0.181	0.496	0.158	0.085
	MEAN_B4	-0.482	-0.147	0.033	0.018	0.178
	MEAN_B5	-0.428	-0.225	-0.306	-0.050	-0.004
	Var_B1	-0.419	-0.219	-0.011	0.233	0.230
	Var_B2	-0.482	-0.209	-0.165	0.000	0.070
	Var_B3	-0.388	-0.171	0.366	0.155	0.181
	Var_B4	-0.389	-0.244	-0.153	-0.102	-0.027
	Var_B5	0.193	-0.231	0.027	-0.126	-0.089
VI	B1	-0.374	-0.168	0.405	0.228	0.241

	B2	-0.437	-0.181	0.129	0.058	0.085
	B3	-0.373	-0.147	0.496	0.158	0.178
	B4	-0.482	-0.225	0.033	0.018	-0.004
	B5	-0.428	-0.281	-0.306	-0.050	-0.048
	$CI_{rededge}$	0.403	0.033	-0.530	-0.049	-0.100
	DVI	0.250	-0.236	-0.397	-0.093	-0.076
	EVI	0.277	-0.126	-0.513	-0.077	-0.097
	GNDVI	0.393	0.019	-0.460	-0.057	-0.152
	MTCI	0.410	-0.281	-0.233	0.070	-0.048
	NDVI	0.326	0.072	-0.631	-0.149	0.104
	$NDVI_{rededge}$	0.409	0.037	-0.500	-0.028	-0.225
	OSAVI	0.312	0.057	-0.599	-0.136	-0.070
	PPR	0.091	-0.018	-0.573	-0.552	-0.185
	SIPI	-0.286	0.021	0.587	0.047	-0.564
	TCARI	0.090	-0.065	-0.679	-0.423	0.064
	TCARIOSAVI	-0.273	-0.259	-0.672	-0.490	-0.424
	MCARI	0.090	-0.195	-0.679	-0.423	-0.367
	B1_HH	-0.111	-0.026	0.138	-0.127	0.287
	B1_HL	0.160	0.089	0.084	-0.110	0.226
	B1_LH	0.030	0.292	-0.142	-0.032	-0.083
	B1_LL	-0.376	-0.174	0.409	0.219	0.246
	B2_HH	-0.120	-0.188	0.133	0.046	-0.050
	B2_HL	0.072	0.111	-0.048	-0.100	0.311
	B2_LH	-0.104	0.072	-0.072	-0.102	-0.044
	B2_LL	-0.438	-0.185	0.125	0.032	0.089
	B3_HH	-0.142	-0.149	-0.192	-0.122	0.185
DWT	B3_HL	0.078	0.035	0.030	-0.067	0.231
	B3_LH	-0.163	0.236	-0.032	-0.132	-0.033
	B3_LL	-0.374	-0.150	0.500	0.134	0.184
	B4_HH	0.048	-0.137	-0.202	-0.166	-0.103
	B4_HL	-0.026	0.179	-0.087	-0.102	0.322
	B4_LH	-0.304	0.041	-0.161	-0.140	-0.051
	B4_LL	-0.480	-0.232	0.030	-0.011	0.000
	B5_HH	-0.159	-0.300	0.027	-0.036	0.089
	B5_HL	-0.201	0.100	-0.029	-0.148	-0.029
	B5_LH	-0.063	-0.085	-0.204	0.100	0.068
	B5_LL	-0.410	-0.287	-0.305	-0.045	-0.052

Table S2. Correlation coefficient between multi-scale feature and LAI.

Features		LAI				
		V6	V8	V11	V16	R1
GLCM	ASM_B1	0.493	0.799	0.047	0.727	0.221
	ASM_B2	0.378	0.726	-0.245	0.578	-0.121
	ASM_B3	0.580	0.824	0.472	0.849	0.301
	ASM_B4	-0.168	0.541	-0.268	0.409	-0.320
	ASM_B5	-0.654	-0.269	-0.367	-0.363	-0.434
	Con_B1	-0.390	-0.685	-0.117	-0.718	-0.030
	Con_B2	-0.221	-0.592	-0.038	-0.675	0.228
	Con_B3	-0.272	-0.677	-0.572	-0.839	-0.144
	Con_B4	0.120	-0.431	0.016	-0.559	0.355
	Con_B5	0.725	0.099	-0.011	0.563	0.482
	Cor_B1	-0.301	-0.789	0.074	0.026	0.273
	Cor_B2	-0.412	-0.554	-0.200	0.225	0.533
	Cor_B3	-0.288	-0.787	-0.636	-0.489	-0.137
	Cor_B4	-0.305	-0.253	-0.297	0.274	0.637
	Cor_B5	-0.002	0.303	-0.666	0.076	0.393
	Dis_B1	-0.398	-0.725	-0.090	-0.748	-0.032
	Dis_B2	-0.213	-0.619	0.025	-0.674	0.257
	Dis_B3	-0.310	-0.739	-0.573	-0.865	-0.164
	Dis_B4	0.188	-0.433	0.059	-0.569	0.380
	Dis_B5	0.717	0.168	0.038	0.447	0.481
	Ent_B1	-0.491	-0.782	-0.043	-0.760	-0.115
	Ent_B2	-0.363	-0.689	0.214	-0.635	0.238
	Ent_B3	-0.569	-0.818	-0.546	-0.866	-0.230
	Ent_B4	0.198	-0.472	0.231	-0.497	0.383
	Ent_B5	0.672	0.299	0.277	0.329	0.460
	Hom_B1	0.437	0.752	0.036	0.752	0.078
	Hom_B2	0.250	0.651	-0.149	0.641	-0.256
	Hom_B3	0.458	0.796	0.535	0.865	0.200
	Hom_B4	-0.268	0.442	-0.157	0.536	-0.385
	Hom_B5	-0.691	-0.268	-0.182	-0.287	-0.467
	MEAN_B1	-0.681	-0.825	-0.688	0.774	-0.472
	MEAN_B2	-0.662	-0.798	-0.478	-0.828	-0.321
	MEAN_B3	-0.723	-0.811	-0.772	-0.833	-0.476
	MEAN_B4	-0.649	-0.728	-0.325	-0.859	-0.130
	MEAN_B5	-0.091	-0.353	0.259	-0.823	0.402
	Var_B1	-0.445	-0.716	-0.158	-0.686	-0.010
	Var_B2	-0.334	-0.632	-0.122	-0.680	0.253
	Var_B3	-0.349	-0.698	-0.621	-0.829	-0.150
	Var_B4	0.027	-0.463	-0.083	-0.603	0.371
	Var_B5	0.738	0.139	-0.169	0.612	0.461
VI	B1	-0.681	-0.825	-0.688	-0.824	-0.472

	B2	-0.662	-0.799	-0.477	-0.834	-0.322
	B3	-0.723	-0.811	-0.772	-0.856	-0.476
	B4	-0.648	-0.728	-0.325	-0.823	-0.130
	B5	-0.091	-0.354	0.259	0.851	0.402
	$CI_{rededge}$	0.714	0.846	0.860	0.911	0.769
	DVI	0.771	0.210	0.400	0.911	0.486
	EVI	0.768	0.642	0.568	0.914	0.552
	GNDVI	0.705	0.832	0.795	0.881	0.761
	MTCI	0.148	0.512	0.631	0.850	0.661
	NDVI	0.752	0.833	0.852	0.838	0.743
	$NDVI_{rededge}$	0.721	0.841	0.840	0.878	0.745
	OSAVI	0.760	0.788	0.731	0.884	0.710
	PPR	0.573	0.691	0.456	0.902	0.608
	SIPI	-0.751	-0.789	-0.823	0.641	-0.601
	TCARI	0.686	0.611	0.620	-0.845	0.597
	TCARIOSAVI	0.329	0.405	0.571	0.638	0.555
	MCARI	0.686	0.611	0.620	0.774	0.597
DWT	B1_HH	-0.137	-0.008	-0.218	-0.367	-0.046
	B1_HL	0.074	0.137	-0.363	-0.300	-0.248
	B1_LH	0.021	-0.071	-0.030	0.352	0.083
	B1_LL	-0.677	-0.816	-0.693	-0.818	-0.466
	B2_HH	-0.101	0.364	0.052	0.010	0.032
	B2_HL	0.113	0.098	-0.108	-0.093	-0.196
	B2_LH	0.012	-0.042	-0.086	0.096	0.044
	B2_LL	-0.659	-0.790	-0.481	-0.823	-0.315
	B3_HH	-0.120	0.234	0.088	0.154	-0.043
	B3_HL	0.161	0.155	-0.137	-0.267	-0.287
	B3_LH	-0.179	-0.127	0.206	0.318	0.069
	B3_LL	-0.727	-0.803	-0.774	-0.844	-0.472
	B4_HH	-0.128	0.037	0.107	-0.189	-0.082
	B4_HL	-0.035	0.060	-0.121	0.165	-0.134
	B4_LH	-0.068	-0.139	0.129	-0.047	-0.020
	B4_LL	-0.647	-0.721	-0.331	-0.821	-0.123
	B5_HH	-0.071	0.141	-0.043	-0.037	0.047
	B5_HL	-0.189	-0.226	-0.142	0.351	0.004
	B5_LH	0.200	-0.088	0.122	-0.378	0.021
	B5_LL	-0.076	-0.347	0.249	0.842	0.407

Table S3. Correlation coefficient between multi-scale feature and CCD.

Features		CCD				
		V6	V8	V11	V16	R1
GLCM	ASM_B1	0.513	0.826	0.090	0.442	0.090
	ASM_B2	0.444	0.761	-0.166	0.508	-0.121
	ASM_B3	0.609	0.825	0.462	0.610	0.194
	ASM_B4	-0.087	0.584	-0.199	0.425	-0.226
	ASM_B5	-0.601	-0.204	-0.338	-0.318	-0.354
	Con_B1	-0.442	-0.723	-0.160	-0.513	0.103
	Con_B2	-0.312	-0.628	-0.121	-0.657	0.274
	Con_B3	-0.334	-0.701	-0.580	-0.686	-0.030
	Con_B4	0.027	-0.476	-0.045	-0.646	0.338
	Con_B5	0.681	0.044	-0.015	0.311	0.410
	Cor_B1	-0.265	-0.759	0.060	0.120	0.329
	Cor_B2	-0.375	-0.499	-0.202	0.250	0.403
	Cor_B3	-0.254	-0.748	-0.596	-0.287	-0.020
	Cor_B4	-0.262	-0.183	-0.283	0.357	0.509
	Cor_B5	0.035	0.372	-0.582	0.320	0.381
	Dis_B1	-0.444	-0.762	-0.125	-0.519	0.089
	Dis_B2	-0.302	-0.656	-0.052	-0.644	0.275
	Dis_B3	-0.368	-0.762	-0.570	-0.686	-0.052
	Dis_B4	0.097	-0.477	0.000	-0.631	0.341
	Dis_B5	0.668	0.111	0.033	0.266	0.395
	Ent_B1	-0.516	-0.811	-0.076	-0.498	0.003
	Ent_B2	-0.434	-0.723	0.141	-0.578	0.227
	Ent_B3	-0.604	-0.829	-0.525	-0.648	-0.121
	Ent_B4	0.114	-0.515	0.172	-0.503	0.301
	Ent_B5	0.618	0.238	0.258	0.279	0.388
	Hom_B1	0.471	0.787	0.067	0.512	-0.032
	Hom_B2	0.329	0.687	-0.077	0.594	-0.249
	Hom_B3	0.505	0.813	0.521	0.663	0.096
	Hom_B4	-0.184	0.485	-0.097	0.550	-0.316
	Hom_B5	-0.638	-0.209	-0.165	-0.217	-0.378
	MEAN_B1	-0.691	0.563	-0.708	-0.624	-0.313
	MEAN_B2	-0.692	-0.846	-0.540	-0.740	-0.253
	MEAN_B3	-0.732	-0.822	-0.775	-0.701	-0.351
	MEAN_B4	-0.685	-0.828	-0.378	-0.760	-0.114
	MEAN_B5	-0.174	-0.761	0.222	0.761	0.380
	Var_B1	-0.487	-0.747	-0.201	-0.486	0.126
	Var_B2	-0.411	-0.661	-0.201	-0.637	0.296
	Var_B3	-0.397	-0.718	-0.629	-0.673	-0.034
	Var_B4	-0.058	-0.502	-0.143	-0.636	0.359
	Var_B5	0.705	0.091	-0.167	0.500	0.418
VI	B1	-0.690	-0.846	-0.708	-0.622	-0.313

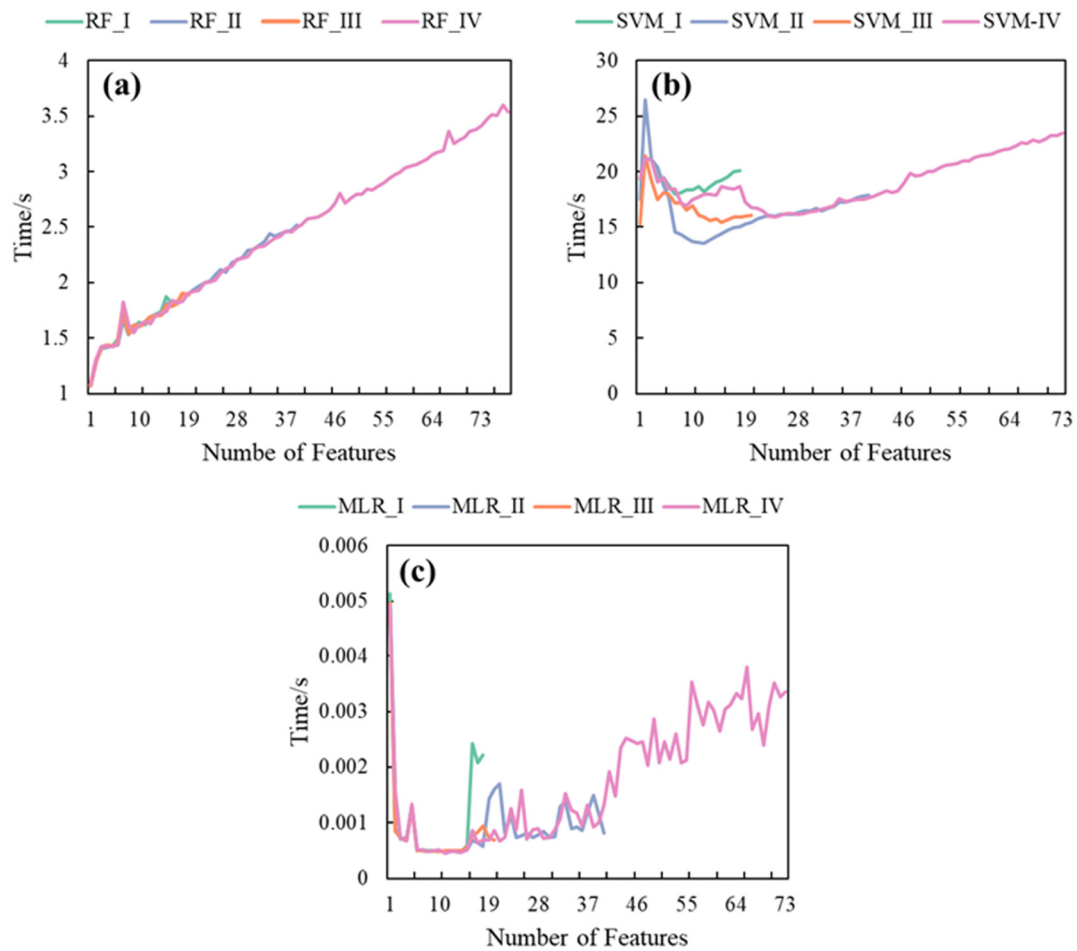|					
	B2	-0.691	-0.822	-0.539	-0.740	-0.253
	B3	-0.731	-0.828	-0.775	-0.698	-0.352
	B4	-0.685	-0.761	-0.378	-0.760	-0.114
	B5	-0.174	-0.403	0.222	0.761	0.380
	CI$_{rededge}$	0.731	0.835	0.868	0.820	0.691
	DVI	0.748	0.161	0.364	0.790	0.444
	EVI	0.753	0.608	0.526	0.805	0.495
	GNDVI	0.723	0.822	0.825	0.785	0.654
	MTCI	0.208	-0.402	0.696	0.831	0.702
	NDVI	0.750	0.513	0.833	0.724	0.590
	NDVI$_{rededge}$	0.737	0.827	0.861	0.809	0.683
	OSAVI	0.753	0.838	0.698	0.755	0.593
	PPR	0.521	0.772	0.367	0.234	0.269
	SIPI	-0.736	0.685	-0.812	-0.761	-0.536
	TCARI	0.642	-0.792	0.513	0.436	0.378
	TCARIOSAVI	0.248	0.347	0.454	0.263	0.303
	MCARI	0.642	0.563	0.513	0.436	0.378
DWT	B1_HH	-0.153	-0.019	-0.237	-0.414	0.167
	B1_HL	0.078	0.162	-0.427	-0.332	-0.086
	B1_LH	0.011	-0.007	-0.101	0.315	0.040
	B1_LL	-0.688	-0.839	-0.714	-0.622	-0.304
	B2_HH	-0.131	0.319	0.124	0.062	0.042
	B2_HL	0.100	0.129	-0.171	-0.148	0.019
	B2_LH	-0.030	-0.028	-0.149	0.025	0.031
	B2_LL	-0.690	-0.815	-0.547	-0.747	-0.245
	B3_HH	-0.132	0.206	0.038	0.091	0.080
	B3_HL	0.143	0.169	-0.159	-0.264	-0.127
	B3_LH	-0.195	-0.071	0.243	0.214	0.053
	B3_LL	-0.736	-0.821	-0.776	-0.701	-0.344
	B4_HH	-0.115	-0.001	0.020	-0.274	-0.136
	B4_HL	-0.056	0.100	-0.200	0.094	0.086
	B4_LH	-0.137	-0.130	0.077	-0.132	-0.044
	B4_LL	-0.683	-0.756	-0.390	-0.776	-0.106
	B5_HH	-0.098	0.068	-0.073	-0.010	0.121
	B5_HL	-0.212	-0.206	-0.208	0.213	0.004
	B5_LH	0.157	-0.098	0.061	-0.307	0.054
	B5_LL	-0.150	-0.398	0.208	0.757	0.382

Figure S1. The time used by the three methods trained on the validation set after four feature datasets. (a)–(c) represent the running time of RF, SVM, and MLR. RF_I, RF_II, RF_III, and RF_IV is the time used for the RF method trained using dataset I, dataset II, dataset III, and dataset IV, respectively. Similarly, MLR_I, MLR_II, MLR_III, MLR_IV, SVM_I, SVM_II, SVM_III, and SVM_IV, respectively are the same as RF_I, RF_II, RF_III, RF_IV.