

Supplementary Materials

Table S1. Parameters of RF and XGBoost with different inputs

Bands (B)	RF		XGBoost		
	number-of-tree	max-feature	number-of-tree	learning-rate	max-depth-of-tree
Red	100	1	100	0.05	5
Blue	100	1	100	0.01	6
Green	150	1	100	0.01	6
NIR	100	1	100	0.05	6
RE	100	1	100	0.05	6
Red+NIR	200	2	50	0.05	6
Red+Green+NIR	200	2	50	0.05	9
Red+Blue+Green+NIR	150	2	100	0.05	12
Red+Blue+Green+NIR+RE	200	2	100	0.05	9
NDVI	100	1	100	0.01	6
GNDVI	100	1	100	0.01	6
LCI	100	1	150	0.01	6
NDRE	50	1	50	0.01	6
OSAVI	100	1	150	0.05	6
LCI+NDRE	100	2	100	0.05	12
GNDVI+LCI+NDRE	150	2	100	0.05	12
NDVI+GNDVI+LCI+NDRE	200	2	100	0.01	15

OSAVI+NDVI+GNDVI+LCI+NDRE	200	2	100	0.05	15
Red+NIR+OSAVI+NDVI+GNDVI+LCI+NDRE	200	2	100	0.05	15
ALL-10	200	3	100	0.05	15

Table S2. Statistical evaluation for the RF and XGBoost with multispectral bands (B) as input variables during the training period

Bands (B)	RF					XGBoost				
	RMSE	R ²	MAE	NSE	MAPE	RMSE	R ²	MAE	NSE	MAPE
Red	0.681	0.971	0.466	0.968	0.228	0.898	0.731	0.611	0.728	0.266
Blue	0.777	0.963	0.522	0.962	0.208	1.101	0.642	0.743	0.631	0.324
Green	0.679	0.969	0.433	0.969	0.236	0.968	0.717	0.701	0.701	0.305
NIR	0.668	0.973	0.450	0.971	0.249	0.852	0.785	0.621	0.777	0.271
RE	0.728	0.960	0.592	0.959	0.308	1.102	0.578	0.854	0.575	0.372
Red+NIR	0.433	0.988	0.253	0.987	0.135	0.614	0.893	0.373	0.884	0.163
Red+Green+NIR	0.479	0.988	0.332	0.988	0.191	0.605	0.901	0.329	0.898	0.143
Red+Blue+Green+NIR	0.472	0.988	0.324	0.988	0.175	0.588	0.911	0.318	0.903	0.139
Red+Blue+Green+NIR+RE	0.411	0.989	0.267	0.989	0.163	0.591	0.905	0.301	0.902	0.131

Table S3. Statistical evaluation for the RF and XGBoost with vegetation indexes (VIs) as input variables during the training period

Vegetation indexes (VIs)	RF					XGBoost				
	RMSE	R ²	MAE	NSE	MAPE	RMSE	R ²	MAE	NSE	MAPE
NDVI	0.497	0.990	0.307	0.992	0.153	0.700	0.855	0.440	0.855	0.149
GNDVI	0.477	0.987	0.345	0.995	0.206	0.643	0.871	0.394	0.867	0.134
LCI	0.450	0.996	0.262	0.996	0.134	0.600	0.882	0.374	0.881	0.127
NDRE	0.469	0.997	0.321	0.994	0.157	0.626	0.880	0.404	0.876	0.137
OSAVI	0.560	0.984	0.313	0.991	0.185	0.771	0.820	0.491	0.818	0.166
LCI+NDRE	0.456	0.992	0.320	0.996	0.163	0.593	0.887	0.377	0.887	0.128
GNDVI+LCI+NDRE	0.473	0.989	0.316	0.989	0.158	0.625	0.890	0.353	0.889	0.119
NDVI+GNDVI+LCI+NDRE	0.483	0.995	0.248	0.992	0.200	0.585	0.891	0.315	0.895	0.107
OSAVI+NDVI+GNDVI+LCI+NDRE	0.412	0.995	0.244	0.997	0.125	0.590	0.899	0.340	0.895	0.115

Table S4. Statistical evaluation for the RF and XGBoost with multispectral bands and vegetation indexes (VIs) as input variables during the training period

Model Type		RF		XGBoost	
Inputs		Red+NIR+OSAVI+NDVI+	ALL-10	Red+NIR+OSAVI+NDVI+	ALL-10
		GNDVI+LCI+NDRE		GNDVI+LCI+NDRE	
Evaluation indices	RMSE	0.388	0.393	0.514	0.525
	R ²	0.996	0.995	0.932	0.933
	MAE	0.211	0.221	0.288	0.274
	NSE	0.994	0.994	0.93	0.933
	MAPE	0.076	0.081	0.127	0.127