

Supplementary Table S3. The evaluation results of the classification model of VNIR.

			NM	PC	PCS	PN	S
PLS-DA	Precision	P.M.P	0.938	0.919	0.889	0.9	0.938
		Thres: 0.5	0.973	0.945	0.954	0.914	0.965
	Recall	P.M.P	0.633	0.857	0.755	0.678	0.735
		Thres: 0.5	0.433	0.302	0.628	0.352	0.082
	Accuracy	P.M.P	0.796	0.89	0.83	0.801	0.843
		Thres: 0.5	0.711	0.642	0.799	0.659	0.539
	FPR	P.M.P	0.042	0.076	0.094	0.075	0.048
		Thres: 0.5	0.012	0.018	0.03	0.033	0.003
	F1 score	P.M.P	0.756	0.887	0.817	0.774	0.824
		Thres: 0.5	0.6	0.457	0.758	0.508	0.151
XGBoost	Precision	P.M.P	0.992	0.991	0.995	0.993	0.997
		Thres: 0.5	0.992	0.992	0.996	0.993	0.997
	Recall	P.M.P	0.967	0.978	0.99	0.973	0.968
		Thres: 0.5	0.967	0.978	0.99	0.973	0.963
	Accuracy	P.M.P	0.98	0.985	0.993	0.983	0.983
		Thres: 0.5	0.98	0.985	0.993	0.983	0.98
	FPR	P.M.P	0.008	0.009	0.005	0.007	0.003
		Thres: 0.5	0.008	0.008	0.004	0.007	0.003
	F1 score	P.M.P	0.979	0.984	0.993	0.983	0.982
		Thres: 0.5	0.979	0.985	0.993	0.983	0.98

NM: non-mulching, PCs: crushed pinecones, PCS: a mixture of crushed pinecones and sulfur, PNs: pine needles, and S: sulfur treatment.