

Supplementary Table S1. The evaluation results of the classification model of leaf growth and physiology.

			NM	PC	PCS	PN	S
PLS-DA	Precision	P.M.P	0.902	0.8	0.8	0.732	0.846
		Thres: 0.5	0.968	0.813	0.571	0.667	0.892
	Recall	P.M.P	0.617	0.567	0.533	0.217	0.8
		Thres: 0.5	0.25	0.217	0.017	0.05	0.55
	Accuracy	P.M.P	0.775	0.713	0.7	0.569	0.827
		Thres: 0.5	0.621	0.583	0.502	0.513	0.742
	FPR	P.M.P	0.067	0.142	0.133	0.079	0.146
		Thres: 0.5	0.008	0.05	0.013	0.025	0.067
	F1 score	P.M.P	0.733	0.663	0.64	0.334	0.822
		Thres: 0.5	0.397	0.342	0.032	0.093	0.68
XGBoost	Precision	P.M.P	0.939	0.897	0.88	0.767	0.907
		Thres: 0.5	0.949	0.895	0.889	0.795	0.906
	Recall	P.M.P	0.7	0.583	0.583	0.55	0.817
		Thres: 0.5	0.7	0.567	0.533	0.55	0.767
	Accuracy	P.M.P	0.827	0.758	0.752	0.692	0.867
		Thres: 0.5	0.831	0.75	0.733	0.704	0.844
	FPR	P.M.P	0.046	0.067	0.079	0.167	0.083
		Thres: 0.5	0.038	0.067	0.067	0.142	0.079
	F1 score	P.M.P	0.802	0.707	0.702	0.641	0.86
		Thres: 0.5	0.806	0.694	0.667	0.65	0.831

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