

Supplementary Materials: The Classification Performance and Mechanism of Machine-Learning Algorithms in Winter Wheat Mapping Using Sentinel-2 10 m Resolution Imagery

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Code link of this research:

<https://code.earthengine.google.com/8fee30ff313e6cadf1cb3abbb9f06499>

Table S1. Various assessment indicators under 50 groups of different training sets and validation sets. OA = Overall accuracy, UA = User's accuracy, PA = Producer's accuracy, K = Kappa, s = SVM, r = RF, c = CART.

seeds	OAs	CAs	PA	PA	PA	PA	PA	PA	PA	PA	PA	PA
1	0.923	0.958	0.948	0.897	0.919	0.971	0.93	0.891	0.888	0.936	0.929	0.85
2	0.926	0.948	0.933	0.902	0.918	0.927	0.955	0.889	0.888	0.941	0.944	0.848
	0.933	0.959	0.948	0.909	0.917	0.982	0.924	0.887	0.893	0.921	0.924	0.856
3	0.93	0.946	0.962	0.904	0.917	0.954	0.937	0.889	0.887	0.954	0.916	0.848
4	0.927	0.951	0.941	0.901	0.933	0.989	0.938	0.911	0.893	0.925	0.932	0.857
5	0.928	0.951	0.955	0.903	0.918	0.957	0.938	0.888	0.895	0.927	0.924	0.857
6	0.929	0.965	0.935	0.903	0.926	0.95	0.954	0.901	0.874	0.919	0.919	0.831
7	0.919	0.955	0.93	0.892	0.908	0.934	0.909	0.875	0.879	0.934	0.909	0.836
8	0.935	0.952	0.952	0.912	0.913	0.957	0.931	0.883	0.88	0.902	0.941	0.836
9	0.922	0.938	0.956	0.894	0.921	0.938	0.948	0.894	0.86	0.906	0.915	0.811
10	0.924	0.946	0.939	0.898	0.91	0.939	0.954	0.878	0.874	0.934	0.923	0.83
11	0.939	0.962	0.944	0.917	0.917	0.937	0.944	0.887	0.889	0.93	0.92	0.852
12	0.936	0.961	0.937	0.914	0.927	0.957	0.941	0.901	0.889	0.916	0.951	0.849
13	0.935	0.953	0.933	0.912	0.929	0.953	0.95	0.905	0.881	0.944	0.901	0.839
14	0.929	0.952	0.955	0.904	0.917	0.947	0.947	0.888	0.905	0.926	0.963	0.871
15	0.934	0.957	0.946	0.911	0.923	0.949	0.928	0.896	0.884	0.944	0.933	0.845
16	0.933	0.94	0.947	0.91	0.925	0.943	0.946	0.899	0.88	0.952	0.912	0.839
17	0.92	0.948	0.917	0.892	0.919	0.952	0.945	0.89	0.898	0.923	0.951	0.861
18	0.927	0.956	0.935	0.902	0.921	0.935	0.953	0.894	0.896	0.916	0.936	0.861
19	0.914	0.946	0.925	0.886	0.939	0.942	0.967	0.918	0.875	0.896	0.935	0.831
20	0.92	0.96	0.933	0.891	0.91	0.959	0.935	0.881	0.869	0.902	0.938	0.825
21	0.926	0.971	0.941	0.901	0.933	0.963	0.94	0.909	0.89	0.941	0.941	0.854
22	0.93	0.947	0.94	0.906	0.914	0.948	0.922	0.884	0.897	0.91	0.959	0.86
23	0.923	0.951	0.944	0.896	0.916	0.929	0.958	0.886	0.903	0.957	0.942	0.87
24	0.922	0.968	0.948	0.895	0.93	0.969	0.937	0.906	0.863	0.924	0.917	0.817
25	0.921	0.939	0.946	0.894	0.917	0.971	0.917	0.888	0.898	0.952	0.938	0.864
26	0.939	0.964	0.953	0.918	0.924	0.971	0.94	0.898	0.867	0.905	0.912	0.822
27	0.93	0.964	0.961	0.905	0.903	0.905	0.955	0.869	0.904	0.939	0.956	0.872
28	0.928	0.95	0.943	0.903	0.916	0.94	0.943	0.886	0.871	0.922	0.903	0.826
29	0.936	0.954	0.95	0.913	0.929	0.966	0.93	0.903	0.874	0.932	0.916	0.83
30	0.923	0.93	0.962	0.895	0.916	0.971	0.918	0.887	0.879	0.946	0.91	0.838
31	0.934	0.973	0.955	0.91	0.917	0.943	0.943	0.89	0.883	0.942	0.953	0.843
32	0.93	0.966	0.951	0.906	0.919	0.932	0.942	0.89	0.893	0.935	0.904	0.857
33	0.929	0.95	0.95	0.904	0.912	0.947	0.947	0.882	0.876	0.94	0.918	0.832
34	0.918	0.965	0.923	0.89	0.911	0.949	0.931	0.88	0.877	0.909	0.931	0.837
35	0.929	0.958	0.932	0.905	0.946	0.963	0.949	0.927	0.901	0.935	0.971	0.867
36	0.934	0.958	0.962	0.911	0.916	0.968	0.931	0.886	0.869	0.919	0.909	0.823

37	0.932	0.958	0.958	0.908	0.922	0.969	0.916	0.894	0.894	0.933	0.925	0.859
38	0.93	0.963	0.945	0.906	0.91	0.942	0.935	0.879	0.878	0.928	0.918	0.836
39	0.936	0.954	0.957	0.915	0.919	0.97	0.915	0.89	0.9	0.935	0.938	0.864
40	0.938	0.972	0.939	0.916	0.916	0.947	0.929	0.887	0.887	0.926	0.919	0.847
41	0.934	0.948	0.931	0.91	0.916	0.974	0.91	0.887	0.882	0.947	0.943	0.84
42	0.931	0.955	0.955	0.907	0.924	0.928	0.935	0.897	0.88	0.926	0.916	0.838
43	0.917	0.955	0.931	0.887	0.925	0.961	0.924	0.898	0.862	0.95	0.861	0.814
44	0.921	0.952	0.968	0.893	0.924	0.971	0.95	0.897	0.877	0.906	0.928	0.831
45	0.934	0.966	0.938	0.91	0.911	0.94	0.958	0.879	0.874	0.944	0.92	0.832
46	0.917	0.957	0.942	0.889	0.903	0.941	0.945	0.87	0.887	0.96	0.903	0.849
47	0.922	0.942	0.942	0.895	0.923	0.958	0.945	0.895	0.881	0.911	0.947	0.839
48	0.923	0.947	0.95	0.895	0.923	0.954	0.918	0.896	0.885	0.951	0.928	0.844
49	0.921	0.954	0.903	0.893	0.938	0.972	0.934	0.916	0.902	0.943	0.94	0.868

Table S2. The basic indicators for box-plots. OA = Overall accuracy, UA = User's accuracy, PA = Producer's accuracy, K = Kappa, s = SVM, r = RF, c = CART. Q1 = lower quartiles, Q2 = upper quartiles, min = minimum value, max = maximum value, med = median, ave = average.

	OAs	UAs	PA _s	K _s	OAr	UAr	PA _r	K _r	OAc	UA _c	PA _c	K _c
Q1	0.92225	0.9485	0.9355	0.895	0.916	0.94125	0.93	0.886	0.87625	0.9195	0.916	0.832
min	0.9140	0.93	0.903	0.886	0.903	0.905	0.909	0.869	0.86	0.896	0.861	0.811
med	0.9290	0.9545	0.9445	0.9035	0.9185	0.9525	0.939	0.89	0.8835	0.9325	0.9265	0.8435
max	0.9390	0.973	0.968	0.918	0.946	0.989	0.967	0.927	0.905	0.96	0.971	0.872
Q2	0.93375	0.96075	0.95275	0.91	0.924	0.9675	0.947	0.89775	0.893	0.94275	0.94075	0.857
ave	0.93	0.95	0.94	0.90	0.92	0.95	0.94	0.89	0.88	0.93	0.93	0.84