

## Supplementary Information

**Table S1.** Confusion matrix when all three sensors were used.

Pixel-based		Reference (known crop type)					
		Maize	Mustard	Tobacco	Wheat	Row Tot	User Acc
Prediction/ Classification	Maize	1033	50	152	179	1414	0.73
	Mustard	12	690	7	99	808	0.85
	Tobacco	21	128	1339	27	1515	0.88
	Wheat	79	131	62	2257	2529	0.89
	Column Tot	1145	999	1560	2562	6266	
	Prod Acc	0.90	0.69	0.86	0.88		
	F1 score	0.81	0.76	0.87	0.89		
	Overall Accuracy						0.85

**Table S2.** Confusion matrix across small fields using Sentinel-1, and Sentinel-2 data.

Pixels from small fields		Reference (known crop type)					
		Maize	Mustard	Tobacco	Wheat	Row Tot	User Acc
Prediction/ Classification	Maize	265	24	0	54	343	0.77
	Mustard	21	112	0	50	183	0.61
	Tobacco	16	41	80	25	162	0.49
	Wheat	54	10	4	350	418	0.84
	Column Tot	356	187	84	479	1106	
	Prod Acc	0.74	0.60	0.95	0.73		
	F1 score	0.76	0.61	0.65	0.78		
	Overall Accuracy						0.73

**Table S3.** Confusion matrix across small fields using Planet, Sentinel-1, and Sentinel-2 data.

Pixels from small fields		Reference (known crop type)					
		Maize	Mustard	Tobacco	Wheat	Row Tot	User Acc
Prediction/ Classification	Maize	309	16	0	72	397	0.78
	Mustard	11	120	0	34	165	0.73
	Tobacco	8	43	80	11	142	0.56
	Wheat	28	8	4	362	402	0.90
	Column Tot	356	187	84	479	1106	
	Prod Acc	0.87	0.64	0.95	0.76		
	F1 score	0.82	0.68	0.71	0.82		
	Overall Accuracy						0.79

**Table S4.** Confusion matrix across large fields using Sentinel 1 and 2 data.

Pixels from large fields		Reference (known crop type)					
		Maize	Mustard	Tobacco	Wheat	Row Tot	User Acc
Prediction/ Classification	Maize	649	85	180	137	1051	0.62
	Mustard	10	497	6	84	597	0.83
	Tobacco	75	105	1221	22	1423	0.86
	Wheat	55	125	69	1840	2089	0.88
	Column Tot	789	812	1476	2083	5160	
	Prod Acc	0.82	0.61	0.83	0.88		
	F1 score	0.71	0.71	0.84	0.88		
	Overall Accuracy						0.82

**Table S5.** Confusion matrix across large fields using Planet, Sentinel-1, and Sentinel-2 data.

Pixels from large fields		Reference (known crop type)					
		Maize	Mustard	Tobacco	Wheat	Row Tot	User Acc
Prediction/ Classification	Maize	724	34	152	107	1017	0.71
	Mustard	1	570	7	65	643	0.89
	Tobacco	13	85	1259	16	1373	0.92
	Wheat	51	123	58	1895	2127	0.89
	Column Tot	789	812	1476	2083	5160	
	Prod Acc	0.92	0.70	0.85	0.91		
	F1 score	0.80	0.78	0.88	0.90		
	Overall Accuracy						0.86

**Table S6.** Confusion matrix using early season imagery from all three sensors.

Pixel-based		Reference (known crop type)					
		Maize	Mustard	Tobacco	Wheat	Row Tot	User Acc
Prediction/ Classification	Maize	254	455	568	677	1954	0.13
	Mustard	184	119	139	582	1024	0.12
	Tobacco	243	212	714	316	1485	0.48
	Wheat	464	213	139	987	1803	0.55
	Column Tot	1145	999	1560	2562	6266	
	Prod Acc	0.22	0.12	0.46	0.39		
	F1 score	0.16	0.12	0.47	0.45		
	Overall Accuracy						0.33

**Table S7.** Confusion matrix using peak season imagery from all three sensors.

Pixel-based		Reference (known crop type)					
		Maize	Mustard	Tobacco	Wheat	Row Tot	User Acc
Prediction/ Classification	Maize	670	130	302	427	1529	0.44
	Mustard	97	626	32	354	1109	0.56
	Tobacco	117	58	1151	165	1491	0.77
	Wheat	261	185	75	1616	2137	0.76
	Column Tot	1145	999	1560	2562	6266	
	Prod Acc	0.59	0.63	0.74	0.63		
	F1 score	0.50	0.59	0.75	0.69		
	Overall Accuracy						0.65

**Table S8.** Confusion matrix using late season imagery from all three sensors.

Pixel-based		Reference (known crop type)					
		Maize	Mustard	Tobacco	Wheat	Row Tot	User Acc
Prediction/ Classification	Maize	917	94	244	164	1419	0.65
	Mustard	53	434	383	218	1088	0.40
	Tobacco	108	249	844	163	1364	0.62
	Wheat	67	222	89	2017	2395	0.84
	Column Tot	1145	999	1560	2562	6266	
	Prod Acc	0.80	0.43	0.54	0.79		
	F1 score	0.72	0.42	0.58	0.81		
	Overall Accuracy						0.67

**Table S9.** Confusion matrix using early and peak season imagery from all three sensors.

Pixel-based		Reference (known crop type)					
		Maize	Mustard	Tobacco	Wheat	Row Tot	User Acc
Prediction/ Classification	Maize	520	162	490	436	1608	0.32
	Mustard	128	588	25	404	1145	0.51
	Tobacco	161	71	965	159	1356	0.71
	Wheat	336	178	80	1563	2157	0.72
	Column Tot	1145	999	1560	2562	6266	
	Prod Acc	0.45	0.59	0.62	0.61		
	F1 score	0.38	0.55	0.66	0.66		
	Overall Accuracy						0.58

**Table S10.** Confusion matrix using peak and late season imagery from all three sensors.

Pixel-based		Reference (known crop type)					
		Maize	Mustard	Tobacco	Wheat	Row Tot	User Acc
Prediction/ Classification	Maize	1010	77	212	222	1521	0.66
	Mustard	69	717	73	293	1152	0.62
	Tobacco	24	42	1178	85	1329	0.89
	Wheat	42	163	97	1962	2264	0.87
	Column Tot	1145	999	1560	2562	6266	
	Prod Acc	0.88	0.72	0.76	0.77		
	F1 score	0.76	0.67	0.82	0.81		
	Overall Accuracy						0.78

**Table S11.** Confusion matrix using early, peak, and late season imagery from all three sensors.

Pixel-based		Reference (known crop type)					
		Maize	Mustard	Tobacco	Wheat	Row Tot	User Acc
Prediction/ Classification	Maize	944	87	207	229	1467	0.64
	Mustard	49	628	34	185	896	0.70
	Tobacco	36	78	1208	132	1454	0.83
	Wheat	116	206	111	2016	2449	0.82
	Column Tot	1145	999	1560	2562	6266	
	Prod Acc	0.82	0.63	0.77	0.79		
	F1 score	0.72	0.66	0.80	0.80		
	Overall Accuracy						0.77