

Mapping the Expansion of Boom Crops in Mainland Southeast Asia Using Dense Time Stacks of Landsat Data

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Table S1. Codes of the land-cover and land-cover change classes for the interpretation of the confusion matrices.

Land-Cover/Change Class	Code
Water	1
Evergreen forests (EF)	2
Deciduous forests (DF)	3
Low vegetation areas (LVA)	5
Rubber (permanent)	8
Cashew (permanent)	9
Rotational agriculture	10
New water (hydropower dams)	11
Fruit trees (stable)	12
Expansion of LVA	13
Pineapple (permanent)	14
Rubber (2000–2002; from EF)	201
Rubber (2000–2002; from LVA)	203
Rubber (2003–2005; from EF)	231
Rubber (2003–2005; from DF)	232
Rubber (2003–2005; from LVA)	233
Rubber (2006–2008; from EF)	261
Rubber (2006–2008; from DF)	262
Rubber (2006–2008; from LVA)	263
Rubber (2009–2011; from EF)	291
Rubber (2009–2011; from DF)	292
Rubber (2009–2011; from LVA)	293
Rubber (2012–2013; from EF)	321
Rubber (2012–2013; from DF)	322
Rubber (2012–2013; from LVA)	323
Cashew (2000–2002; from EF)	401
Cashew (2003–2005; from EF)	431
Cashew (2003–2005; from LVA)	433
Cashew (2006–2008; from EF)	461
Cashew (2006–2008; from DF)	462
Cashew (2006–2008; from LVA)	463
Cashew (2009–2011; from EF)	491
Cashew (2012–2013; from EF)	521
Coffee (2000–2002, from LVA)	623
Coffee (2006–2008, from EF)	671
Eucalyptus (2006–2008, from DF)	862
Eucalyptus (2009–2011, from DF)	892
Eucalyptus (2012–2014, from DF)	922
Sugarcane (2006–2008, from EF)	1061
Sugarcane (2006–2008, from DF)	1062
Sugarcane (2009–2011, from DF)	1092

Table S2. Confusion matrix of footprint 131046.

Map Class	Reference Class																			Sum	UA (%)
	1	2	3	5	10	11	12	13	231	232	233	261	262	263	291	293	321	322	323		
1	18																			18	100.0
2		125	3		2		1													131	95.4
3		4	63	1	5			1												74	85.1
5				30	1		2	1								1				35	85.7
10		2	7	2	29			4				2					1			47	61.7
11						6														6	100.0
12			1		1		18													20	90.0
13							1	2							1					4	50.0
231									7			1								8	87.5
232										5										5	100.0
233											6									6	100.0
261									2			12	2							16	75.0
262													18	4						22	81.8
263	1						1						2	23						27	85.2
291															6					6	100.0
293														1		6				7	85.7
321					1			1				1					12			15	80.0
322																		5		5	100.0
323																			2	2	100.0
Sum	19	131	74	33	39	6	23	9	9	5	6	16	22	28	7	7	13	5	2	454	100.0
PA (%)	94.7	95.4	85.1	90.9	74.4	100.0	78.3	22.2	77.8	100.0	100.0	75.0	81.8	82.1	85.7	85.7	92.3	100.0	100.0	94.7	

Table S3. Confusion matrix of footprint 130047.

Map Class	Reference Class																			Sum	UA (%)
	1	2	3	5	8	10	11	12	13	14	231	233	261	262	263	291	292	293	323		
1	21																			21	100.0
2		92	2			1		1												96	95.8
3		4	67						1											72	93.1
5				110		2			6										6	124	88.7
8					6															6	100.0
10				1		3			1											5	60.0
11							13													13	100.0
12		1		2		1		34												38	89.5
13									5											5	100.0
14										11										11	100.0
231						1					12		1		1					15	80.0
233												29			3					32	90.6
261											3		9		1			3		16	56.3
262														14						14	100.0
263												8			63	1				72	87.5
291						1							2			10		1		14	71.4
292														1			6			7	85.7
293															2			22		24	91.7
323				1		2			1										8	12	66.7
Sum	21	97	69	114	6	11	13	35	14	11	15	37	12	15	70	11	6	26	14	597	100.0
PA (%)	100.0	94.9	97.1	96.5	100.0	27.3	100.0	97.1	35.7	100.0	80.0	78.4	75.0	93.3	90.0	90.9	100.0	84.6	57.1	100.0	

Table S4. Confusion matrix of footprint 129046.

Map Class	Reference Class												Sum	UA (%)
	1	2	3	5	8	10	11	201	231	261	291	321		
1	26												26	100.0
2		93	4			16					1		114	81.6
3			26			2							28	92.9
5				55		4							59	93.2
8					5								5	100.0
10		18	5	6		195			1	4	5	6	240	81.3
11							8						8	100.0
201								12					12	100.0
231									28	4			32	87.5
261					1	2			7	117	9		136	86.0
291						5				5	18		28	64.3
321						1					1	10	12	83.3
Sum	26	111	35	61	6	225	8	12	36	130	34	16	700	100.0
PA (%)	100.0	83.8	74.3	90.2	83.3	86.7	100.0	100.0	77.8	90.0	52.9	62.5	100.0	

Table S5. Confusion matrix of footprint 126049.

Map Class	Reference Class																														Sum	UA (%)	
	1	2	3	5	8	9	10	11	13	201	231	232	233	261	262	263	291	321	401	431	461	491	521	623	671	862	892	922	1061	1062			1092
1	30																															30	100.0
2		89	1			1	6																				1					98	90.8
3		1	32	2																							3	1				39	82.1
5			1	135			1		2															2						1		142	95.1
8					7					1																						8	87.5
9		1				5																										6	83.3
10		10	2			1	58		1					3			1		1	1	2	3	2									85	68.2
11								5																								5	100.0
13							1		4																						2	7	57.1
201										4																						4	100.0
231											18	1	1																			20	90.0
232												2																				2	100.0
233												1	19			4																24	79.2
261											5	1	1	130	1	2	1															141	92.2
262														1	5																	6	83.3
263											2	1	2	2		12																19	63.2
291							1							2			24	1														28	85.7
321									1									5														6	83.3
401																			4													4	100.0
431																				4												4	100.0
461																					2											2	100.0
491																					1	5										6	83.3
521																							3									3	100.0
623																								3								3	100.0
671				1			1																		8							10	80.0
862																										15						15	100.0
892			2				1																			1	22					26	84.6
922																												5				5	100.0
1061																														16		16	100.0
1062																															5	5	100.0
1092									1																						3	4	75.0
Sum	30	101	38	138	7	7	69	5	9	5	25	6	23	138	6	18	26	6	5	5	8	5	5	8	16	26	6	16	6	5	773	100	
PA (%)	100	88.1	84.2	97.8	100	71.4	84.1	100	44.4	80	72	33.3	82.6	94.2	83.3	66.7	92.3	83.3	80	80	40.0	62.5	60	60.0	100	93.8	84.6	83.3	100	83.3	60	100	

Table S6. Confusion matrix of footprint 126050.

Map Class	Reference Class																													Sum	UA (%)
	1	2	3	5	8	9	10	11	13	201	203	231	233	261	262	263	291	292	321	322	401	433	461	462	463	491	671	892	922		
1	34																													34	100.0
2		165	2				7																							174	94.8
3			54																									1	1	56	96.4
5			4	131			2																						1	138	94.9
8					8					2	1																			11	72.7
9						7																								7	100.0
10		1					11												1											13	84.6
11								5																						5	100.0
13				2					41									1										2	3	49	83.7
201										4																				4	100.0
203											2																			2	100.0
231												21	2	6																29	72.4
233											2	2	39			10						2								55	70.9
261							1					4	1	55		1										1				63	87.3
262															5															5	100.0
263													6	2		13										1				22	59.1
291																	9													9	100.0
292			2															14		1										17	82.4
321																			6											6	100.0
322			1																	26										27	96.3
401																					5									5	100.0
433																						3								3	100.0
461																							16							16	100.0
462															1										6					7	85.7
463												1														3				4	75.0
491		1																									5			6	83.3
671																												8		8	100.0
892																													2	2	100.0
922									1																				12	13	92.3
Sum PA (%)	34	167	63	133	8	7	21	5	42	6	5	28	48	63	6	24	9	15	7	27	5	5	16	6	5	5	8	5	17	790	100.0

Table S7. Confusion matrix of footprint 125050.

Map Class	Reference Class																							Sum	UA (%)
	1	2	3	5	8	9	10	11	13	201	233	261	262	263	291	292	321	322	401	431	461	623	671		
1	10																							10	100.0
2		99	1		1		7																	108	91.7
3	1	1	23	1			2									1								29	79.3
5				25			6		4							3								38	65.8
8					14		1																	15	93.3
9						5																		5	100.0
10		3	2	4		1	28			1							1	1			1		1	43	65.1
11								10																10	100.0
13									3															3	100.0
201					2					23														25	92.0
233											16													16	100.0
261												64		3										67	95.5
262													2											2	100.0
263												1		7										8	87.5
291		1	1	1			4								44	1	3							55	80.0
292			1										2		1	36		4						44	81.8
321															2		25	3						30	83.3
322			1	4								1				2		15						23	65.2
401																			13	1				14	92.9
431																				13	1			14	92.9
461																					5			5	100.0
623																						5		5	100.0
671																							7	7	100.0
Sum	11	104	29	35	17	6	48	10	7	24	16	65	5	10	47	43	29	23	13	14	7	5	8	576	100.0
PA (%)	90.9	95.2	79.3	71.4	82.4	83.3	58.3	100.0	42.9	95.8	100.0	98.5	40.0	70.0	93.6	83.7	86.2	65.2	100.0	92.9	71.4	100.0	87.5	90.9	

Table S8. Confusion matrix of footprint 125051.

Map Class	Reference Class																			Sum	UA (%)
	1	2	3	5	9	10	11	13	261	262	263	291	292	293	321	322	401	431	461		
1	11																			11	100.0
2		41	1			3														45	91.1
3		7	114	1		1							2			1				126	90.5
5			1	32				1					2			1				37	86.5
9					5	1														6	83.3
10			1	2		18							1							22	81.8
11							6													6	100.0
13				1		1		4												6	66.7
261									100	1	1									102	98.0
262						1		1		37			3							42	88.1
263											9									9	100.0
291						5			2			90	1							98	91.8
292				2		2				1		2	106							113	93.8
293														8						8	100.0
321						1									47					48	97.9
322								1					1		1	120				123	97.6
401																	15			15	100.0
431																		32	4	36	88.9
461																		1	26	27	96.3
Sum	11	48	117	38	5	33	6	7	102	39	10	92	116	8	48	122	15	33	30	880	100.0
PA (%)	100.0	85.4	97.4	84.2	100.0	54.6	100.0	57.1	98.0	94.9	90.0	97.8	91.4	100.0	97.9	98.4	100.0	97.0	86.7	100.0	