

1 Supplementary Document

2 Using Farmer Decision Rules for Mapping Historical 3 Land Use Change Patterns from 1954 to 2007 in Rural 4 Northwestern Vietnam

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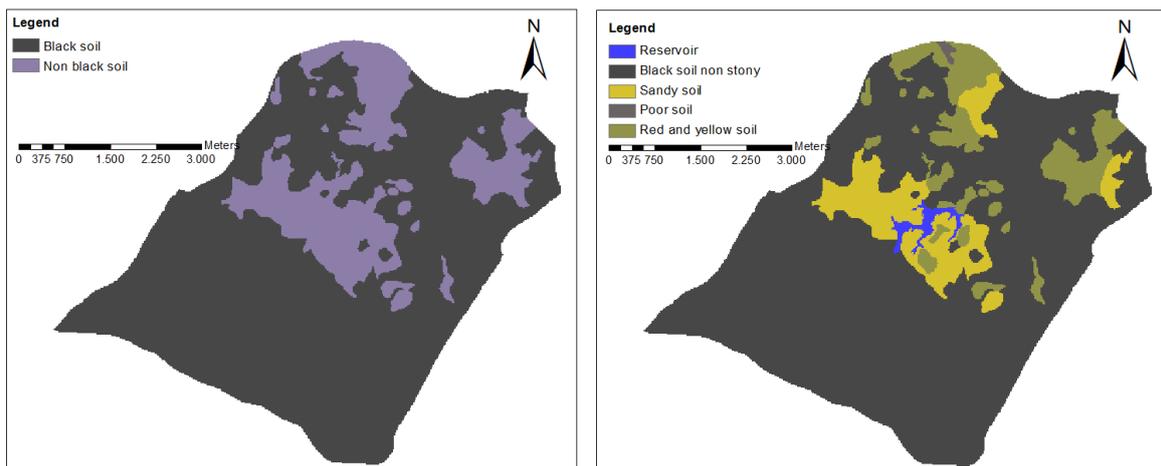
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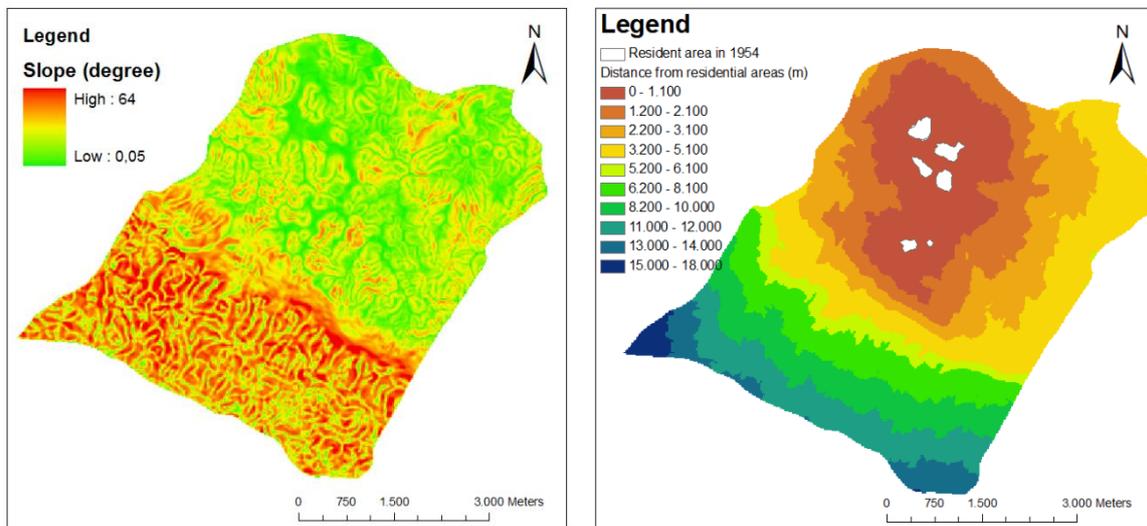
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13 **Figure S1.** Local soil map of the Chieng Khoi commune for reference year 1954, modified from
14 Clemens et al. [36]. The left image presents the black and non-black soil map, the right map represents
15 a detailed soil map with stony properties (sandy, poor, red, and yellow soils) and black soil non-
16 stony.



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19 **Figure S2.** Slope map and distance maps of the Chieng Khoi commune.



Maize	X	M	M	M	M	M	6
Banana		X	2YC	BN	BN	BN	4
2yr cassava			X	2YC	2YC	2YC	5
Sticky maize				X	SM	SM	3
Mango					X	TM	1
Tamarind						X	2

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1999 and 1986	Paddy Rice	Maize	2 yr Cassava	Banana	Vegetable	Mango	Sticky Maize	Rank
Paddy rice	X	PR	PR	PR	PR	PR	PR	7
Maize		X	2YC	M	M	M	M	5
2yr cassava			X	2YC	2YC	2YC	2YC	6
Banana				X	BN	BN	BN	4
Vegetable					X	MG	SM	1
Mango						X	SM	2
Sticky maize							X	3

30 **Table S2.** Comparison of identifying areas after the adjustment process with defined areas, as
31 cropping areas to produce the required food intake according to farmers; positive values indicating
32 that estimated cropping areas were higher than the defined target area*, while negative values
33 indicate estimated cropping areas lower than the defined targeted values.

34 The calculation of the sixth year fallow area received the largest deviation from the "defined
35 value", in this case -0.78 ha, the smallest different areas were the calculation for the second year of
36 fallow, fifth year fallow (+0.02 ha), and second year maize and cassava (-0.02 ha). While increasing
37 the distance to reach the defined areas, upland rice crop (in first and second year) had the closest
38 distance to residential areas (1.1 km) while fallow (at all stages) revealed the longest distance to
39 residential areas (2.14 km). The area resulting from all calculations slightly differed with defined
40 areas. For validating the map, four out of six participants agreed with the resulting crop-level maps,
41 while one participant disagreed, and one participant only partly agreed (this farmer mentioned that
42 he gave the grade 5/10 for the result).

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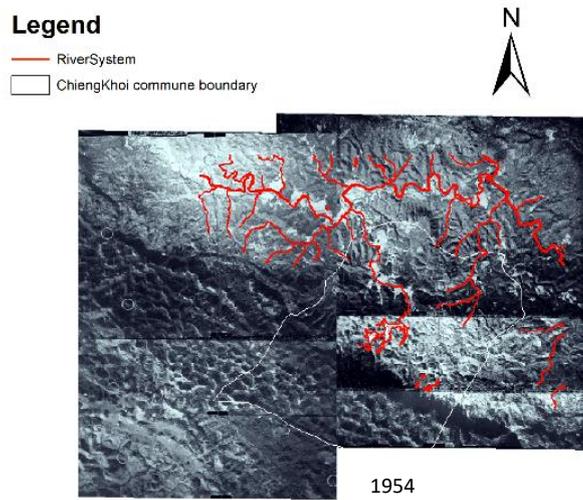
Order of calculation	Target upland crops to calculate in order	Calculated area** (ha)	Defined area (ha)	Difference with defined area** * (ha)
1st	Upland rice first year	31.64	31.5	-0.14
2nd	Upland rice second year	31.40	31.5	+0.10
3rd	Maize/cassava first year	31.84	31.5	-0.34
4th	Maize/cassava second year	31.52	31.5	-0.02
5th	Fallow first year	31.12	31.5	+0.38
6th	Fallow second year	31.48	31.5	+0.02
7th	Fallow third year	31.36	31.5	+0.14
8th	Fallow fourth year	31.60	31.5	-0.10
9th	Fallow fifth year	31.48	31.5	+0.02
10th	Fallow sixth year	32.28	31.5	-0.78

44 * Defined area equal to a value derived from the total upland area divided into 10 (crops)

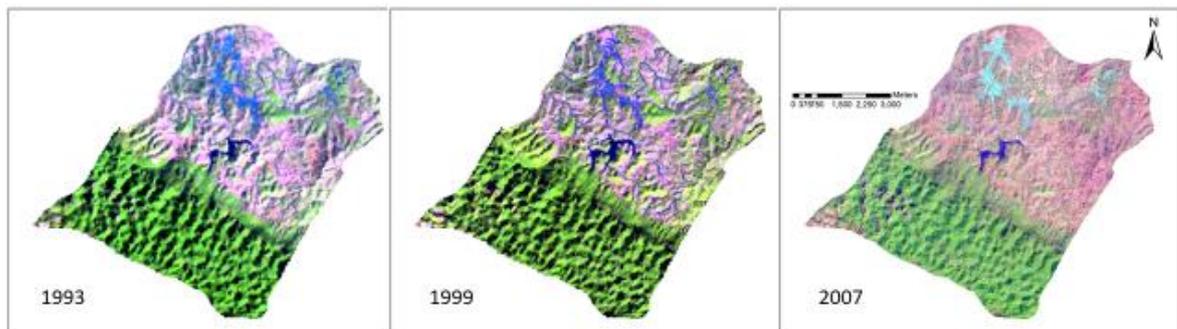
45 ** Calculated area, the values resulting from adjustment processes

46 *** Difference area <1 ha was accepted at the commune level (Statistic Department Yen Chau district,
47 2012)

48 **Figure S3.** A-Remote sensing data (aerial photograph 1954, Landsat 1993, 1999 and LISS III 2007).

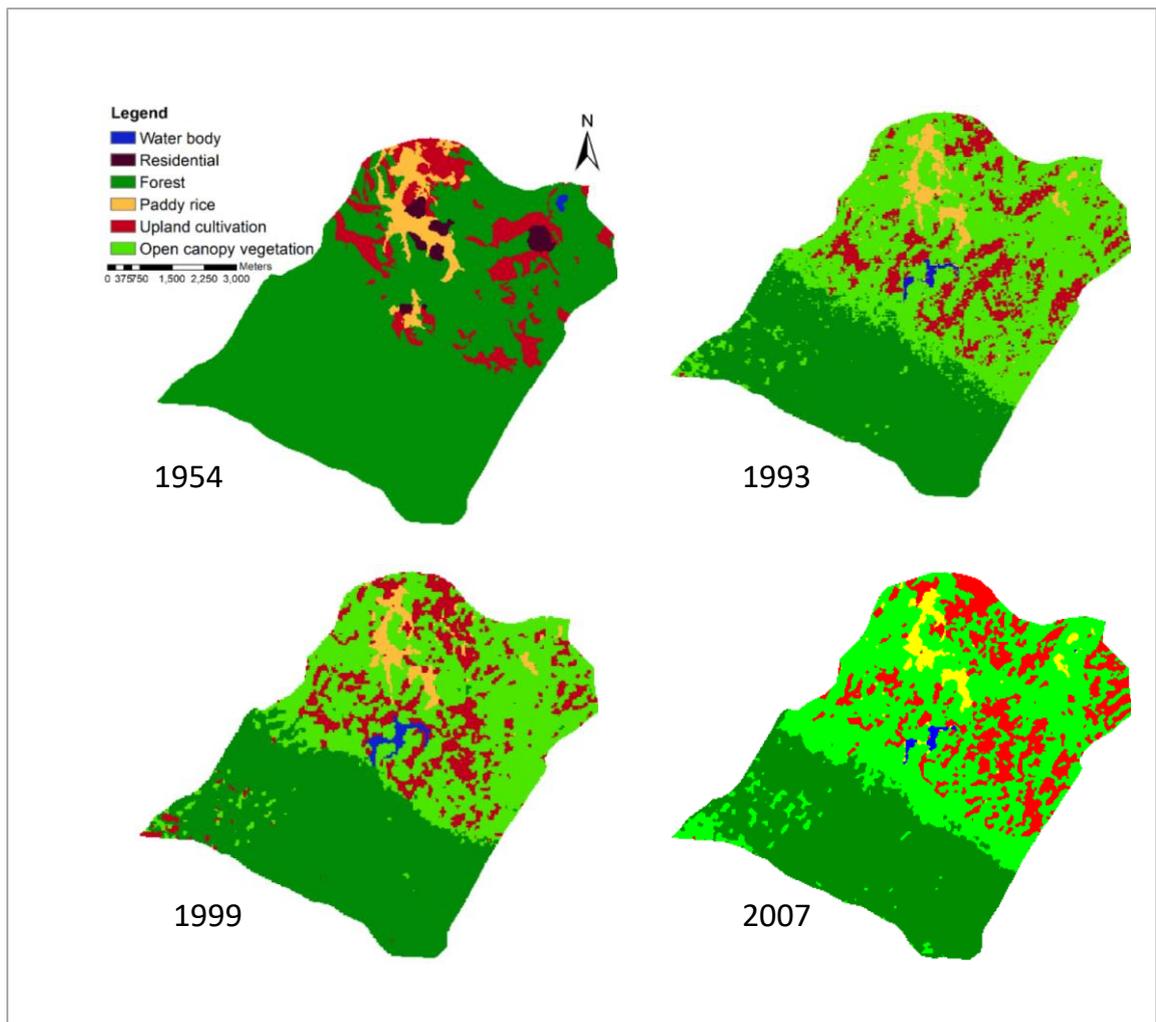


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51 **Figure S4.** Land use map of 1954, 1993, 1999, and 2007 classified from remote sensing data in Appendix 5a using
52 the supervised classification method.



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