



Food and Agriculture
Organization of the
United Nations

10
June
2022

Black soils of Thailand, Country Report

Launch of the
International Research
Institution of Black Soils

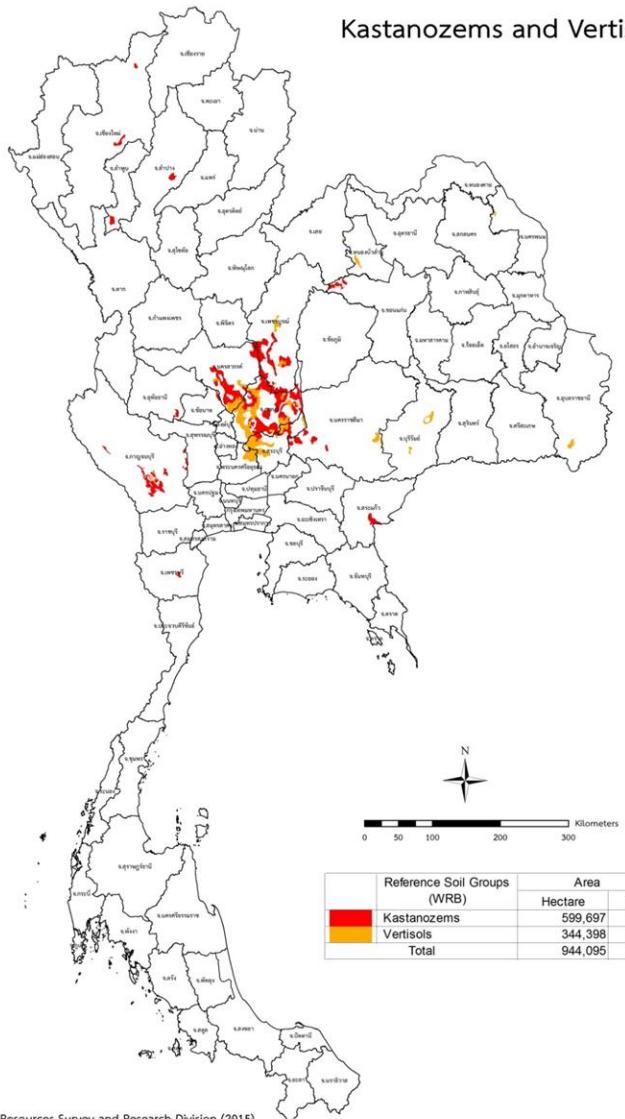
Nuntapon Nongharnpitak
Land Development Department,
Ministry of Agriculture and Cooperatives, Thailand



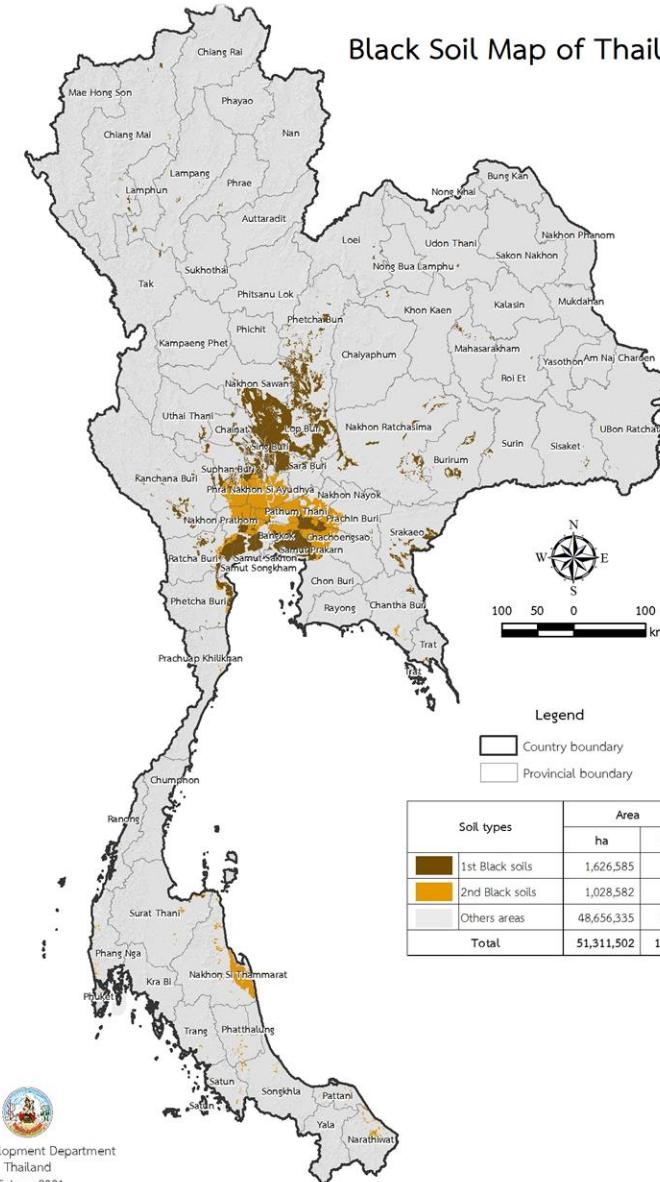


Soil Resources Survey and Research Division (2015)
Land Development Department

Kastanozems and Vertisols



Black Soil Map of Thailand



Launch of the International Research Institution of Black Soils | 10 June 2022



Black soil: follow the FAO definition

Black soils (FAO, 2021) are mineral soils which have a black surface horizon, enriched with organic carbon that is at least 25 cm deep. Two categories of black soils are recognized.

1

1st category Black Soils

- The presence of black or very dark surface horizons typically with a chroma of ≤ 3 moist, a value of ≤ 3 moist and ≤ 5 dry (by Munsell colours);
- The total thickness of black surface horizons of ≥ 25 cm;
- Organic carbon content in the upper 25 cm of the black horizons $\geq 0.6\%$ and $\leq 20\%$;
- CEC in the black surface horizons ≥ 25 cmol/kg; and
- A base saturation in the black surface horizons $\geq 50\%$

2

2nd category Black Soils

- The presence of black or very dark surface horizons typically with a chroma of ≤ 3 moist, a value of ≤ 3 moist and ≤ 5 dry (by Munsell colours);
- The total thickness of the black surface horizons of ≥ 25 cm; and
- Organic carbon content in the upper 25 cm of the black horizons $\geq 0.6\%$ and $\leq 20\%$

Black soil in Thailand

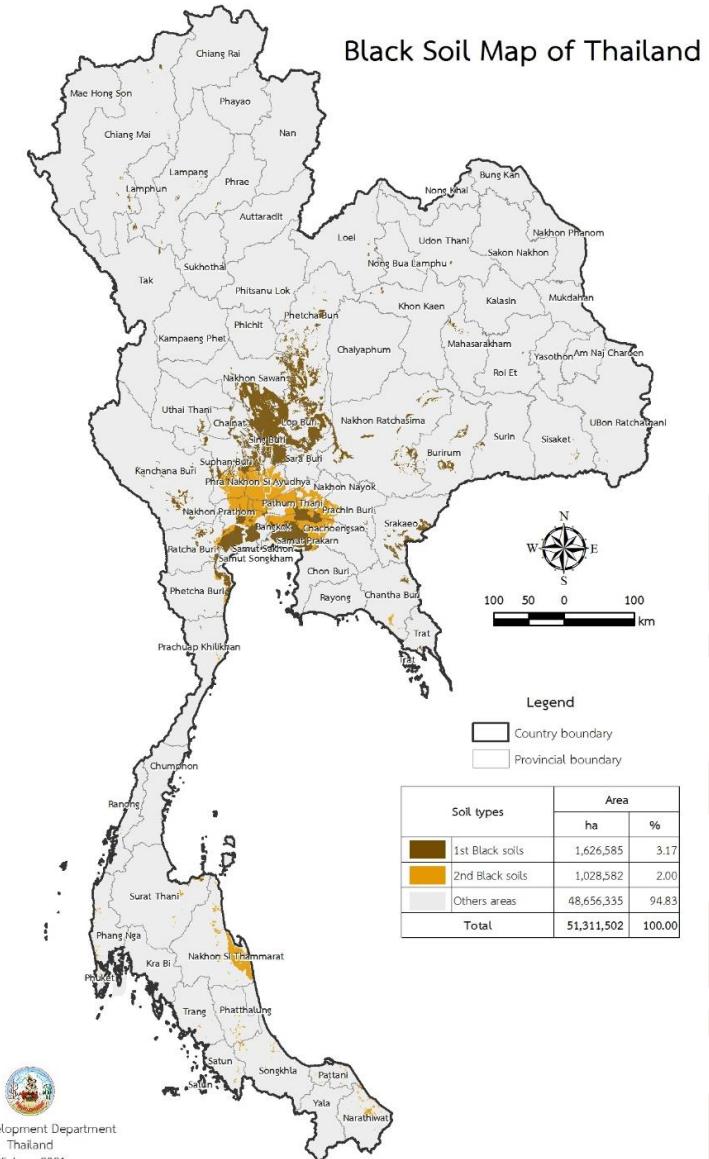
The total areas of black soil are 2,655,167 hectares.

1st category black soils 1,626,585 hectares.

RSG	Order	Great group	Epipedon
Kastanozems	Mollisoils	Haplustolls, Hapludolls	Mollic
Vertisols	Vertisols	Haplusterts	Mollic
Gleysols	Inceptisoils Mollisoils Vertisols	Endoaquepts Endoaquolls Endoaquerts, Epiaquerts	Mollic Mollic Mollic
Luvisols	Alfisoils	Haplustalfs, Paleustalfs	Mollic

2nd category black soils 1,028,582 hectares.

RSG	Order	Great group
Gleysols	Inceptisoils Ultisols	Endoaquepts Plinthaqueults
Luvisols	Alfisoils	Haplustalfs



Launch of the International Research Institution of Black Soils | 10 June 2022



Sample of 1st Black soil



Bangkok
soil series

Eutric Gleysols

Very-fine, smectitic, nonacid, isohyperthermic Vertic Endoaquepts



Paddy field



Lopburi
soil series
Pellic Vertisoils

Very-fine, smectitic,
isohyperthermic Typic
Haplusterts



Field crop



Launch of the International Research Institution of Black Soils | 10 June 2022

Source: <http://iddinnee.idd.go.th/SoilSeries>

Sample of 2nd Black soil



Ayutthaya soil series

Eutric Gleysols

Very-fine, mixed, active, acid, isohyperthermic Vertic Endoaquepts



Paddy field

Launch of the International Research Institution of Black Soils | 10 June 2022

Source: <http://iddinnee.idd.go.th/SoilSeries>



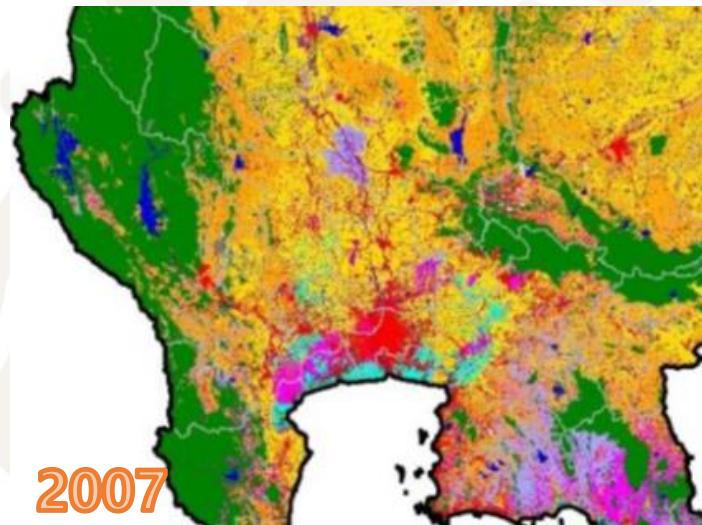
The situation of Black soil in Thailand

- Land utilization from the Black Soils is suited for intensive cropping with high yield and high economic return.

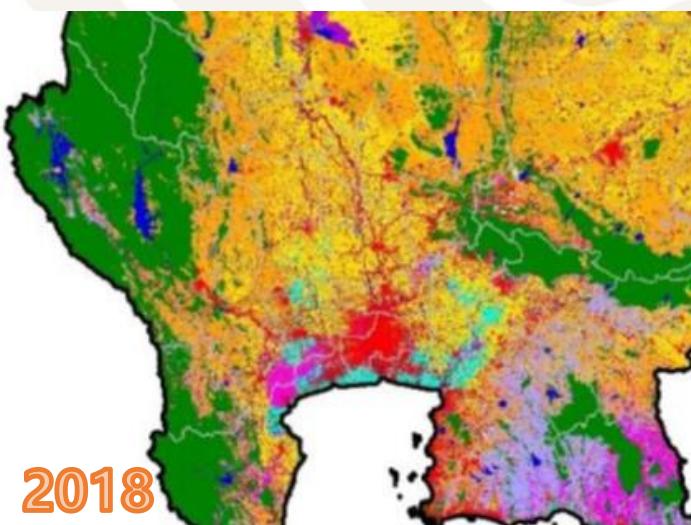


The situation of Black soil in Thailand

- Thailand faced a crisis of land resources during the past decades. The problem that emerged from soils were likely more on soil degradation, declining soil fertility, and soil pollution.
- The fertile lands suitable for agriculture like black soils have been used for non-agricultural activities.
- Farmlands are exposed to natural disasters such as droughts and floods that tend to be more severe due to global climate change.



2007



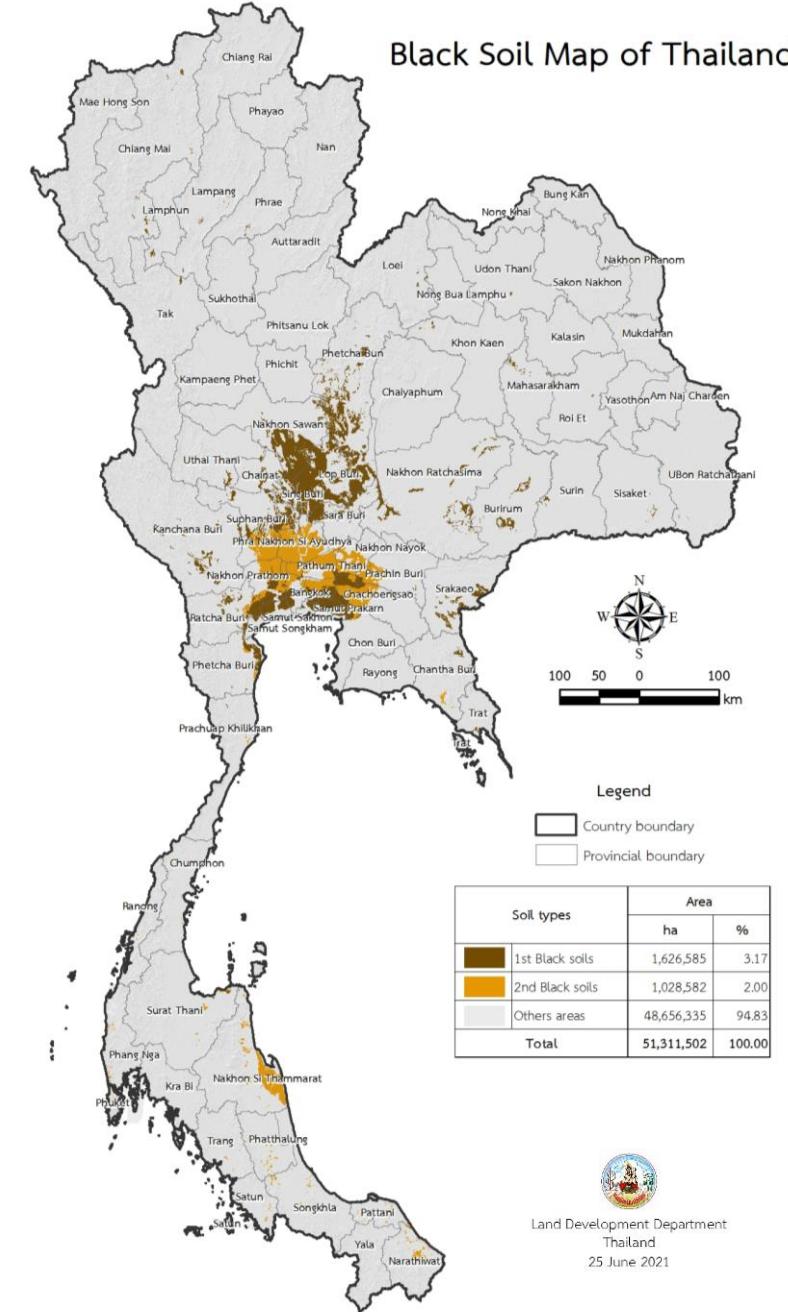
2018



Launch of the International Research Institution of Black Soils | 10 June 2022



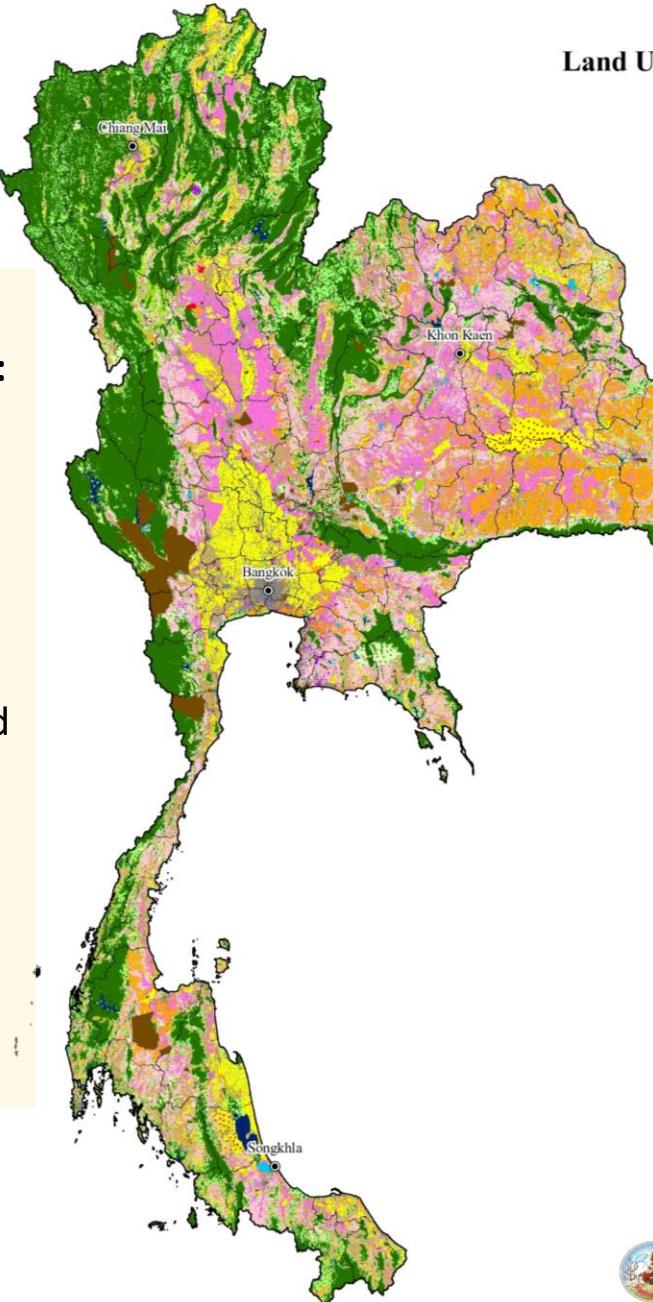
Black Soil Map of Thailand



The policy recommendations for the Black Soils plantation zone are:

- Preserve prime agricultural land for sustainable use to ensure an adequate land base for ag-production.
- Promote intensive ag-production in small farmland to maximize land utilization.
- Designate the prime agricultural land at the local level using the principle of sustainable land-use planning.

Land Use Plan of Thailand



Land Use Plan of Thailand	Total (Rai)	%
1. Forest zone	135,085,480	42.12
1.1 Conservation forest zone	110,573,858	34.47
1.1.1 Protected forest zone	86,215,739	26.88
1.1.2 Forest rehabilitation zone	2,894,140	0.90
1.1.3 Conditional forest rehabilitation zone	21,463,979	6.69
1.2 Economic forest zone	15,887,088	4.96
1.2.1 Preservation forest zone	5,713,406	1.78
1.2.2 Forest rehabilitation zone	788,906	0.25
1.2.3 Conditional forest rehabilitation zone	9,384,776	2.93
1.3 Preservation forest zone by cabinet resolution	8,624,534	2.69
2. Agricultural zone	153,184,527	47.77
2.1 Prime agricultural zone	42,933,316	13.39
2.1.1 Paddy zone	22,612,888	7.05
2.1.2 Field crop, orchard, perennial plants	17,690,527	5.52
2.1.3 GI plants zone (approved by EU)	2,629,901	0.82
2.2 High potential agricultural land	73,193,948	22.83
2.2.1 Paddy zone	33,726,836	10.52
2.2.2 Field crop, orchard, perennial plants	39,467,112	12.31
2.3 Low potential agricultural land	37,057,263	11.56
2.3.1 Paddy zone	21,403,974	6.68
2.3.2 Field crop, orchard, perennial plants	15,653,899	4.88
3. Community zone	14,236,101	4.44
4. Industrial zone	1,958,639	0.61
4.1 Existing industrial zone	1,190,847	0.37
4.2 Mining zone	767,792	0.24
5. Ratchaphatsadu land or Royal property zone	8,239,599	2.57
6. Water resources zone	7,902,556	2.46
6.1 Water resources within forest zone	2,493,472	0.77
6.1.1 Natural water reservoir	1,123,802	0.34
6.1.2 Man-made reservoir	1,369,670	0.43
6.2 Water resources out of forest zone	5,409,084	1.69
6.2.1 Natural water reservoir	3,360,747	1.05
6.2.2 Man-made reservoir	2,048,337	0.64
7. Historical zone	89,991	0.03
8. Recreation and open space zone	-	-
Total	320,696,893	100.00

- Government action plan (Y2023-2027) of the Land Development Department aims to protect and increase the productivity of prime farmland for food security and sustainable use.



Launch of the International Research Institution of Black Soils | 10 June 2022





Public relations & Creating awareness

Participate in the World Soil Day event that will take place on December 5th., to raise awareness and perception of the importance of black soils



Launch of the International Research Institution of Black Soils | 10 June 2022





Food and Agriculture
Organization of the
United Nations

Launch of the International Research Institution of Black Soils

10 June 2022

