

LAND SUITABILITY MAP

CACAO

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS

PROVINCE OF SOUTHERN LEYTE



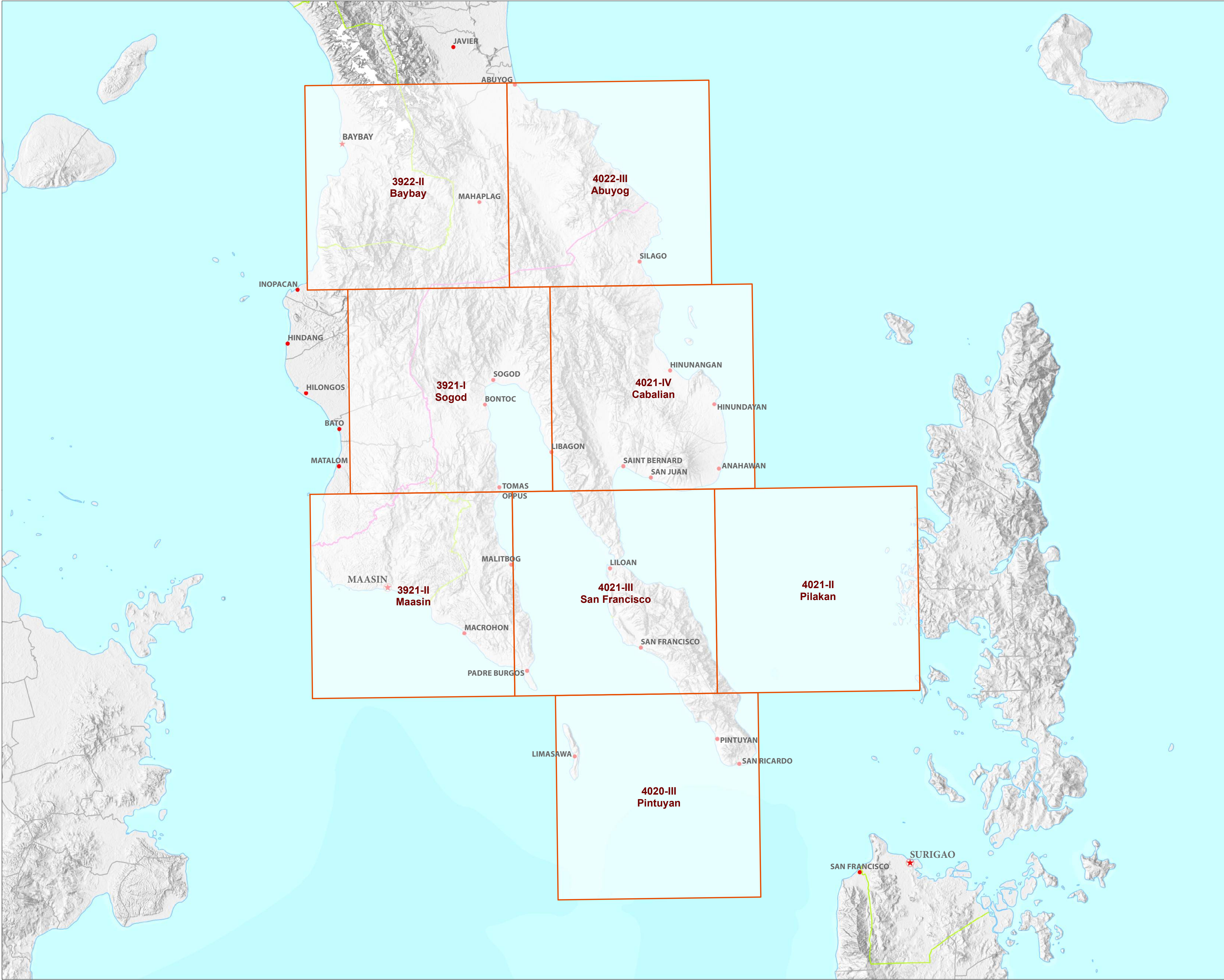
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF AGRICULTURE
BUREAU OF SOILS AND WATER MANAGEMENT

SRDC Bldg., Elliptical Road Cor. Visayas Avenue, Diliman, Quezon City 1101
Tel/Fax No.: (+632) 332-9534 E-mail: bswmclientcenter@yahoo.com

MAP INDEX

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS

PROVINCE OF SOUTHERN LEYTE



LEGEND

Places

- ★ Capital City
- ★ City
- Capital Town
- Town

Administrative Boundary

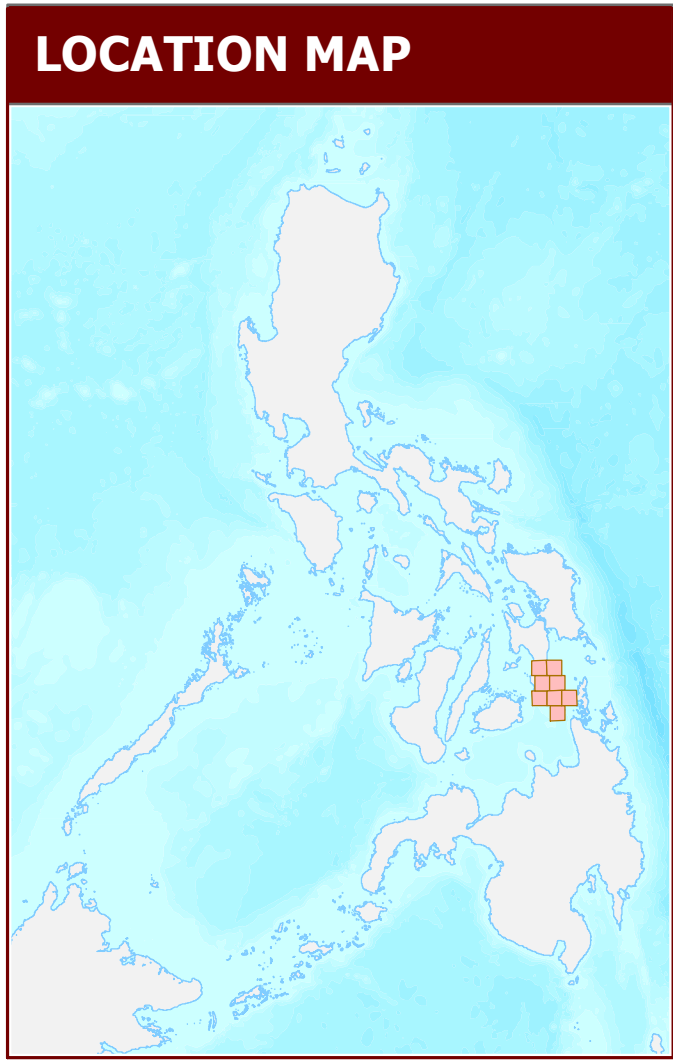
- Regional
- Provincial
- City
- Municipal

Map Index

- Index grid

Topographic Relief

Bathymetry



LAND SUITABILITY MAP FOR CACAO

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS SOUTHERN LEYTE, REGION VIII

EXTENT OF SUITABILITY FOR CACAO PRODUCTION BY MUNICIPALITY

MUNICIPALITY	EXISTING CACAO (Ha)			TOTAL EXISTING AREA (Ha)	EXPANSION AREA (Ha)						CONFLICT RESOLUTION (Ha)										TOTAL POTENTIAL EXPANSION AREA (Ha)
					Coconut		Shrubland, unmanaged*		Grassland, unmanaged*		Corn		Rice paddy, non-irrigated		Sugarcane		Banana		Other crops		
	S1	S2	S3		S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2			
ANAHAWAN	-	-	-	-	1,457	-	-	20	1,457	-	122	-	-	-	-	-	-	-	-	-	3,055
BONTOC	14	-	3	17	339	-	615	178	339	-	155	-	103	6	-	-	16	-	6	5	1,761
CITY OF MAASIN	-	-	-	-	867	596	624	432	867	596	658	422	118	13	-	-	-	-	9	-	5,202
HINUNANGAN	-	-	-	-	1,063	-	775	45	1,063	-	393	-	639	-	-	-	-	-	-	-	3,978
HINUNDAYAN	-	-	-	-	1,855	-	44	-	1,855	-	248	-	229	-	-	-	-	-	183	-	4,414
LIBAGON	36	1	98	134	357	5	87	18	357	5	30	-	63	-	-	-	5	-	-	-	928
LILUAN	-	-	59	59	451	105	5	5	451	105	134	-	22	-	-	-	-	-	-	-	1,278
LIMASAWA	-	-	-	-	35	-	-	-	35	-	-	-	9	-	-	-	-	-	-	-	78
MACROHON	-	-	-	-	869	147	43	179	869	147	156	39	22	3	-	-	-	-	-	-	2,474
MALITBOG	18	3	53	74	215	49	268	300	215	49	95	1	63	43	-	-	1	3	2	-	1,304
PADRE BURGOS	4	20	34	58	414	91	25	57	414	91	11	22	2	6	-	-	-	-	-	-	1,134
PINTUYAN	-	-	-	-	281	-	135	-	281	-	-	-	-	-	1	-	-	-	44	-	741
SAINT BERNARD	-	-	-	-	1,019	37	269	16	1,019	37	306	-	90	-	-	-	-	-	-	-	2,794
SAN FRANCISCO	-	1	35	36	678	32	64	-	678	32	81	-	68	-	-	-	-	-	-	-	1,633
SAN JUAN (CABALIAN)	-	-	-	-	802	-	-	-	802	-	95	-	57	-	81	-	-	-	11	-	1,848
SAN RICARDO	-	-	7	7	327	-	3	-	327	-	-	-	-	-	6	-	-	-	2	-	665
SILAGO	1	-	17	19	1,550	-	1,939	299	1,550	-	636	-	267	-	-	-	-	-	-	-	6,241
SOGOD	-	-	-	-	914	-	389	174	914	-	382	-	69	-	-	-	-	-	-	-	2,841
TOMAS OPPUS	-	-	22	22	165	-	101	9	165	-	179	6	7	-	-	-	-	-	-	-	631
TOTAL	73	25	328	425	13,655	1,063	5,387	1,733	13,655	1,063	3,683	490	1,826	71	88	-	21	3	257	5	43,001

Note: Delivery of cacao planting materials must be started on the onset of rainy season.
*establishment of shade trees prior to planting of cacao.

SUITABILITY CLASSES:

<div></div> Highly Suitable (S1) Land having no significant limitation to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.	<div></div> Marginally Suitable (S3) Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.
<div></div> Moderately Suitable (S2) Land having limitation which in aggregate are moderately severe for sustained application of a given use; the limitation will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.	<div></div> Not Suitable / Not Relevant Land having limitations which may be surmountable in time but which cannot be corrected with existing knowledge at currently acceptable cost; the limitations are so severe as to preclude successful sustained use of the land in the given manner. Existing forest, shrubland greater than 18% slope, irrigated paddy rice and miscellaneous land types such as built up areas, roads, etc are considered as not relevant.

AGRONOMIC REQUIREMENT OF CACAO PRODUCTION

LAND UTILIZATION TYPE	SUITABILITY RATING	SLOPE (%)	SOIL DEPTH (cm)	SOIL TEXTURE	SOIL DRAINAGE	SOIL REACTION (pH)	INHERENT FERTILITY	FLOODING CLASS	EROSION CLASS	ROCK OUTCROPS	ELEVATION (masl)	ANNUAL RAINFALL (mm)	CLIMATIC TYPE
Cacao	S1	<8	>100	CL, SiCL, SCL, SC, SIC, C, HC	WD,MWD	5.6 -7.2	high	none-slight	none-slight	none-few	<1000	2001-4500	I, III, IV
	S2	8 - 30	50 - 100	FSL, L, SiL	SPD,PD	5.1 - 5.5 7.3 - 7.8	medium	moderate	moderate	common	1000-1500	1000-2000	I, II
	S3	>30	<50	S, LS, CSL, SL	VPD,ED	<5.0 - > 7.9	low	severe	severe	many	>1500	<1000 >4500	

SLOPE (%) 0 - 3 - level to gently sloping 3 - 8 - gently sloping to undulating 8 - 18 - undulating to rolling 18 - 30 - rolling to moderately steep 30 - 50 - steep > 50 - very steep	SOIL DRAINAGE ED - excessively drained WD - well drained MWD - moderately well drained SPD - somewhat poorly drained PD - poorly drained VPD - very poorly drained	SOIL REACTION (pH) < 4.5 - extremely acid 4.5 - 5.0 - very strongly acid 5.1 - 5.5 - strongly acid 5.6 - 6.0 - medium acid 6.1 - 6.5 - slightly acid 6.6 - 7.2 - neutral 7.3 - 7.8 - mildly alkaline 7.9 - 8.4 - moderately alkaline > 8.5 - strongly alkaline	SOIL TEXTURE Coarse S - sand LS - loamy sand CSL - coarse sandy loam SL - sandy loam Medium FSL - fine sandy loam L - loam SiL - silt loam CL - clay loam SiCL - silty clay loam SCL - sandy clay loam Fine SC - sandy clay SiC - silty clay C - clay HC - heavy clay
--	---	--	--

LAND LIMITATIONS DESCRIPTION AND COMBINATIONS

ELEVATION EI2 - 1000m - 1500m EI3 - > 1500m	SOIL DRAINAGE D2 - Somewhat poorly drained to poorly drained D3 - Very poorly drained or excessively drained	SOIL DEPTH Sh2 - Moderately deep (50 - 100cm) Sh3 - Very shallow to shallow (< 50cm)	SOIL EROSION E2 - Moderate seasonal erosion E3 - Severe erosion
SLOPE/TOPOGRAPHY T2 - Undulating to moderately steep T3 - Steep to very steep	SOIL TEXTURE Tc - Coarse texture	ROCK OUTCROPS Rc2 - Common Rc3 - Many	FLOODING F2 - Moderate seasonal flooding F3 - Severe seasonal flooding

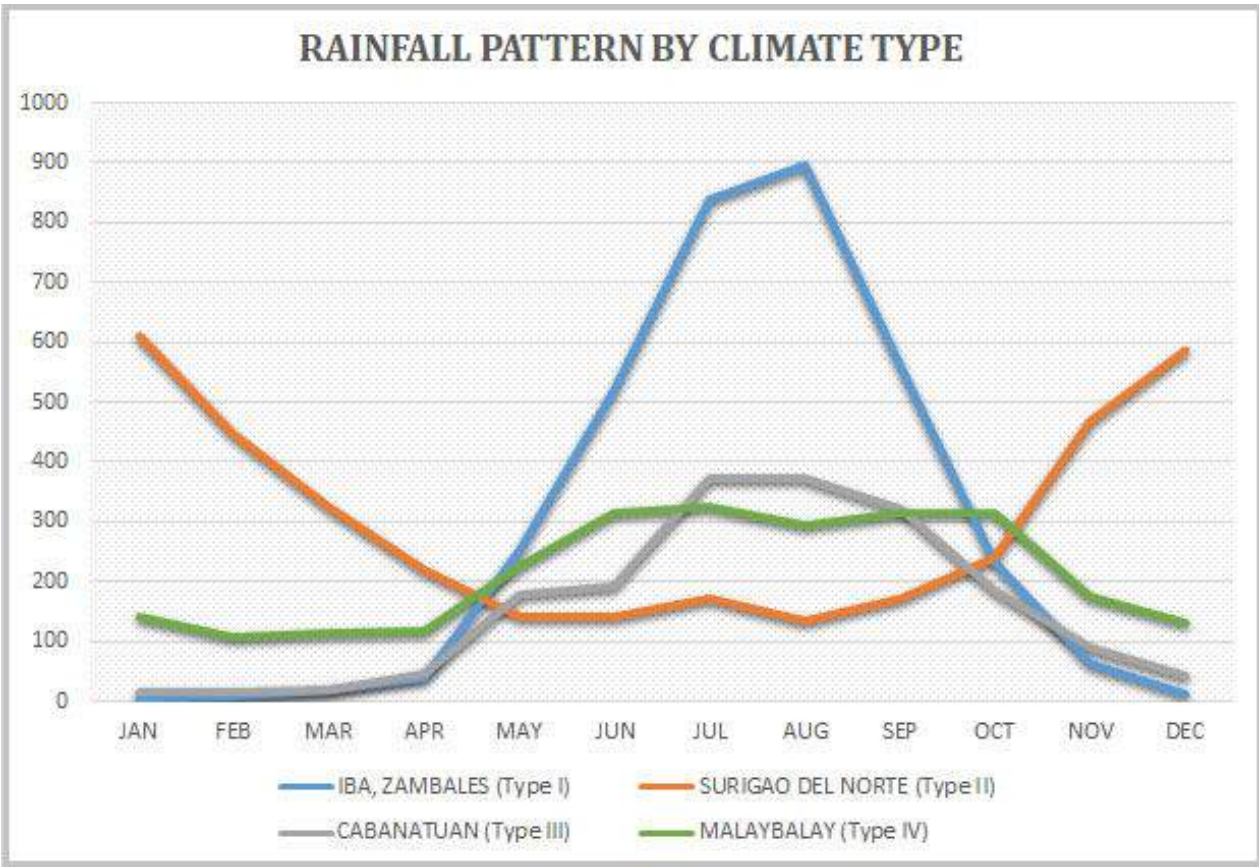
CODE	LAND LIMITATION	CODE	LAND LIMITATION
15	T2-E3-Sh2-Rc3	25	T3-E3-Rc2
16	T2-EI2	26	T3-E3-Rc3
17	T2-EI2-E3	27	T3-E3-Sh3-Rc2
18	T2-EI2-E3-Rc2	28	T3-E3-Sh3-Rc3
19	T2-EI2-E3-Sh2-Rc2	29	T3-EI2
20	T2-EI2-E3-Sh2-Rc3	30	T3-EI2-E3
21	T2-F2-D1	31	T3-EI2-E3-Rc2
22	T2-F3-D1	32	T3-EI2-E3-Sh3-Rc2
23	T3	33	T3-EI2-E3-Sh3-Rc3
24	T3-E3	34	Tc

CODE	LAND USE	CODE	LAND USE
2	Rice paddy, non-irrigated	112	Sugarcane
4	Corn	116	Coconut
34	Diversified crops	126	Grassland
81	Coffee	134	Shrubland, unmanaged
82	Cacao		
85	Mango		
87	Jackfruit		
91	Banana		
105	Fruit trees, mixed		
107	Abaca		

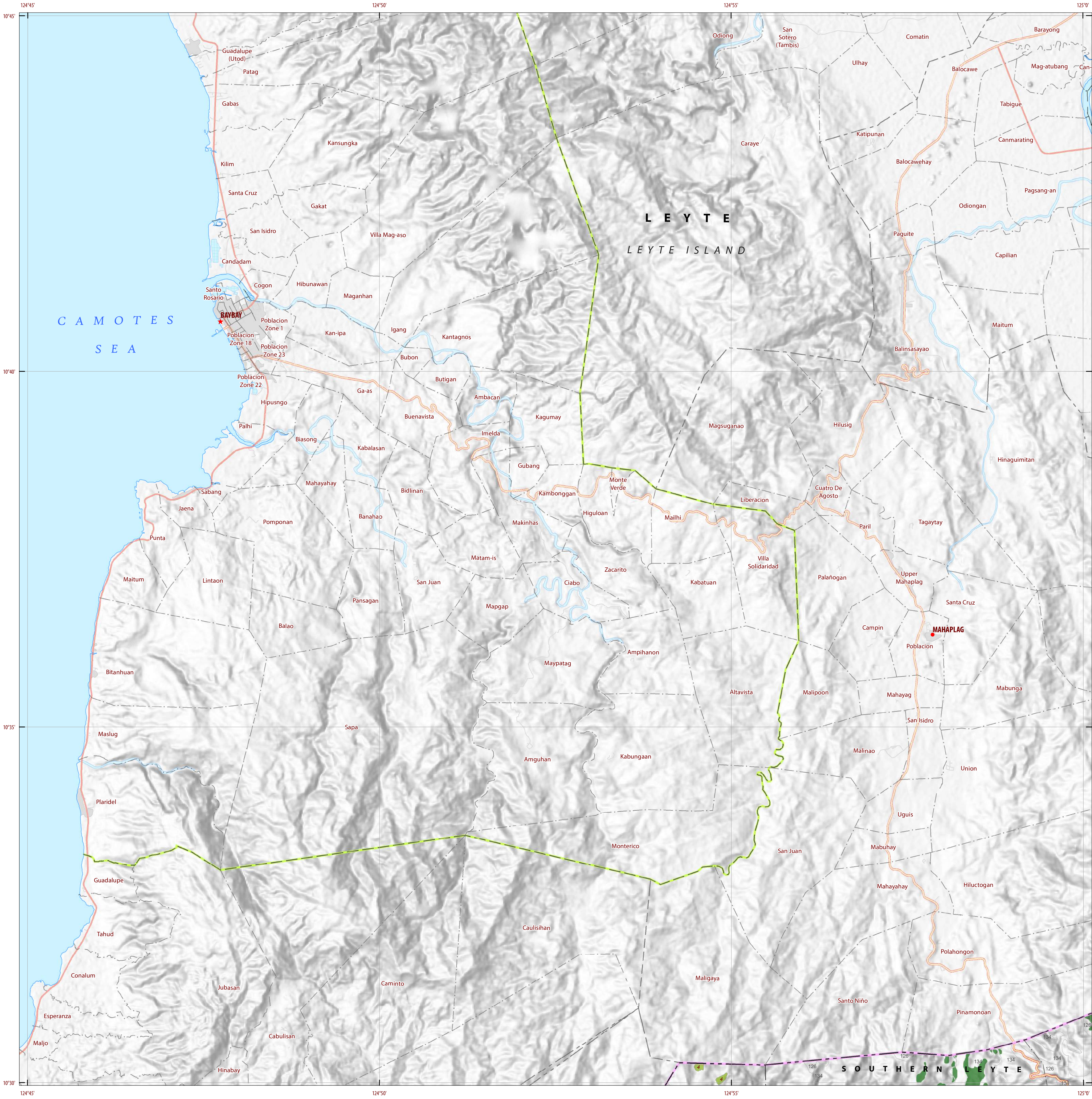
CLIMATE TYPE


TYPE I : Two pronounced season, dry from November to April and wet during the rest of the year. Maximum rain period is from June to September	TYPE II : No dry season with a very pronounced maximum rain period from December to February. There is not a single dry month. Maximum monthly rainfall occurs during the period from March to May.
TYPE III : No very pronounced maximum rain period, with a dry season lasting only from one to three months, either during the period from December to February or from March to May. This type resembles Type I since it has a short dry season.	TYPE IV : Rainfall is more or less evenly distributed throughout the year. This type resembles Type II since it has no dry season.

Northeastern part of Southern Leyte is classified as climatic Type II and Northwestern part is Type IV.



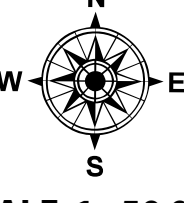
Source: PAGASA 2018, *Climatological Normals (Rainfall)*, Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), accessed 27 July 2018, <<https://www1.pagasa.dost.gov.ph/index.php/climate/climatological-normals>>.

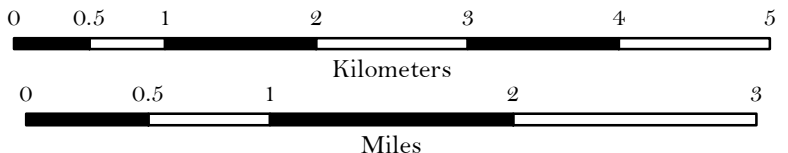




LAND SUITABILITY MAP
CACAO

LAND RESOURCES EVALUATION AND SUITABILITY
ASSESSMENT OF STRATEGIC PRODUCTION AREAS


SCALE 1 : 50 000


Universal Transverse Mercator Zone 51 N, PRS 1992 Datum
DISCLAIMER : All political boundaries are not authoritative.

LEGEND

SUITABILITY CLASSES

S1

Highly Suitable - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.

S2

Moderately Suitable - Land having limitations which in aggregate are moderately severe for sustained application of a given use; the limitations will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected for class S1 land.

S3

Marginally Suitable - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

Not Suitable/ Not Relevant

OTHER SIGNS

NGP Areas

Cacao

Land limitation

Land use

CONVENTIONAL SIGNS

ROADS

Expressway

Trunk line

Primary

Secondary

Tertiary

BOUNDARY

Region

Province

District

Municipality

Barangay

HYDROLOGY

Sea / Shoreline

Lakes / Rivers

PLACES

Capital City / City

Capital Town / Town

LAND USE

Built-up

Fishpond

Mangrove

ADJOINING SHEETS

3922-II

4022-III

3921-I

4021-IV

INDEX MAP

MISCELLANEOUS INFORMATION

SOURCES OF INFORMATION

Topographic information taken from NAMRIA Topographic Map at 1:50,000 scale. Land resources information from the Agricultural Land Management and Evaluation Division (ALMED), Soil Survey Division (SSD) and Laboratory Services Division (LSD) of BSWM. Rice areas obtained from the Land Use System (FAO, 2015) and Philippine Rice Information System (PRISM) (IRRI, 2015). Data analysis and compilation through the Land Resources Evaluation and Suitability Assessment of Strategic Production Areas for Coffee and Cacao Project implemented by ISWM (2017).

Project Leader

BERNARDO B. PASCUA

GIS and Cartography

IRVIN K. SAMALCA

Funding Agency

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Department of Agriculture Regional Field Office of CAR, Region II, IV-A, IV-B, VI, VII, VIII, IX, X, XI, XII and CARAGA(XIII)

Local Government Unit (LGU) of covered provinces and municipalities

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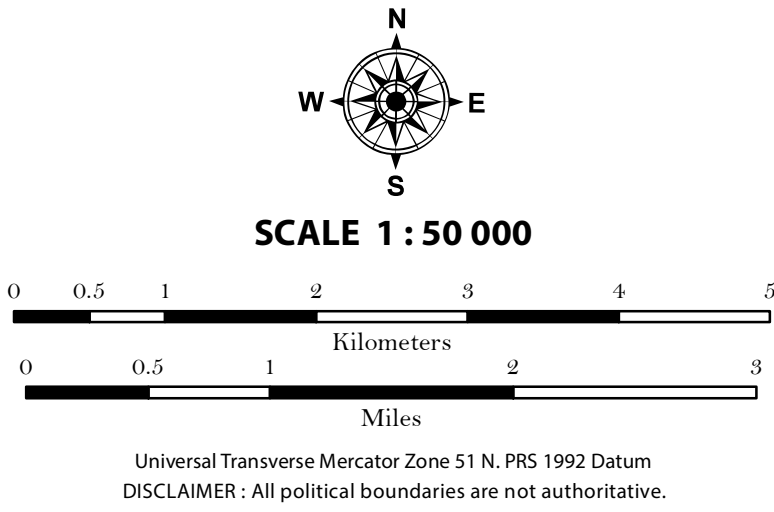


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LAND SUITABILITY MAP
CACAO

LAND RESOURCES EVALUATION AND SUITABILITY
ASSESSMENT OF STRATEGIC PRODUCTION AREAS



LEGEND

SUITABILITY CLASSES

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- S3 Marginally Suitable** - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

Not Suitable/ Not Relevant

OTHER SIGNS

- NGP Areas
- Cacao
- Land limitation
- Land use

CONVENTIONAL SIGNS

ROADS	BOUNDARY	HYDROLOGY
Expressway	Region	Sea / Shoreline
Trunk line	Province	Lakes / Rivers
Primary	District	PLACES
Secondary	Municipality	Capital City / City
Tertiary	Barangay	Capital Town / Town

LAND USE

- Built-up
- Fishpond
- Mangrove

ADJOINING SHEETS

4022-III

3922-II 4021-IV

INDEX MAP

MISCELLANEOUS INFORMATION

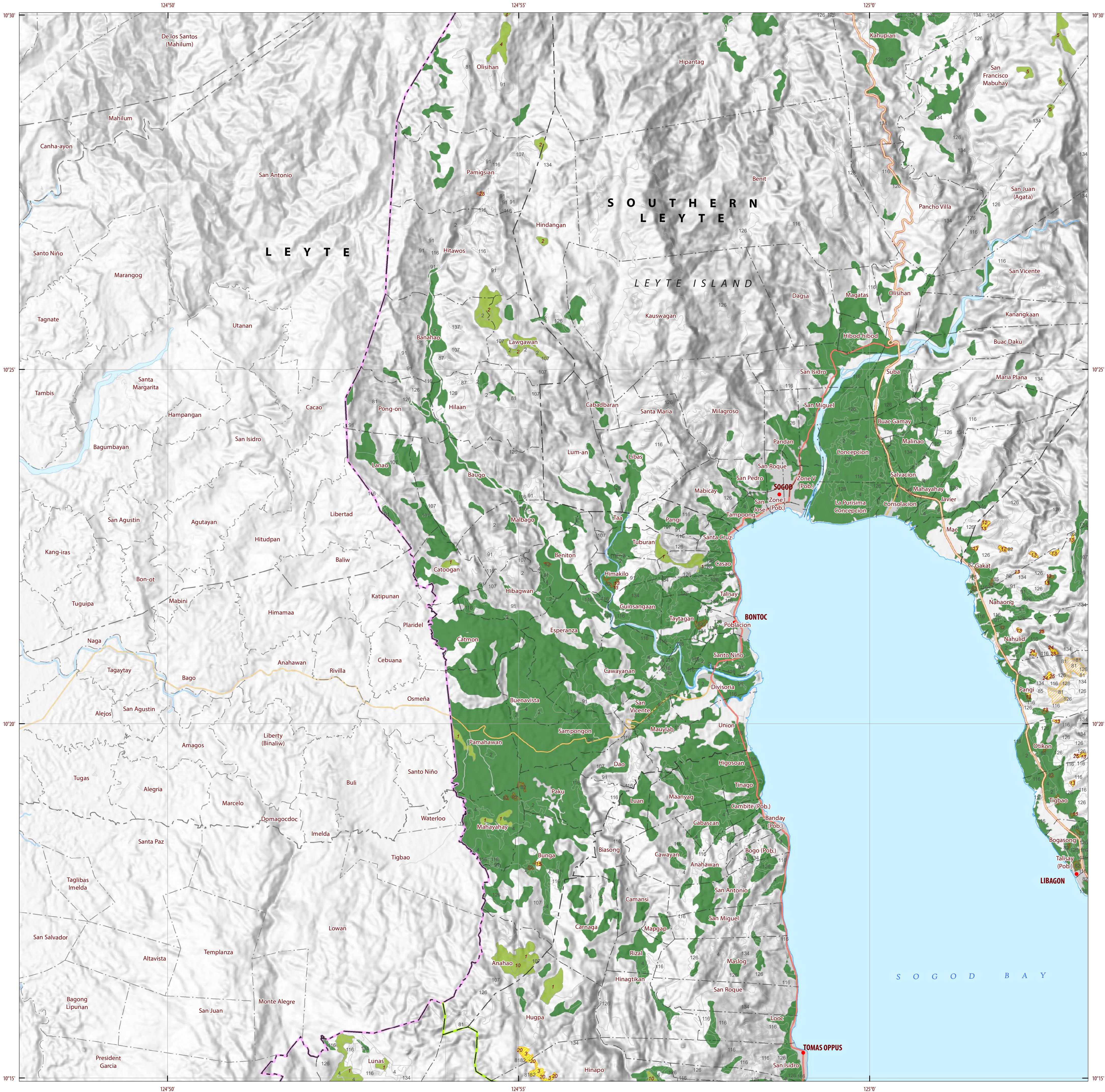
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Project Leader : BERNARDO B. PASCUA
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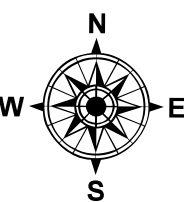
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LAND SUITABILITY MAP
CACAO

LAND RESOURCES EVALUATION AND SUITABILITY
ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



Universal Transverse Mercator Zone 51 N, PRS 1992 Datum
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LEGEND

SUITABILITY CLASSES

S1

Highly Suitable

Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.

S2

Moderately Suitable

Land having limitations which in aggregate are moderately severe for sustained application of a given use; the limitations will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.


S3


Marginally Suitable


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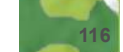
Not Suitable/ Not Relevant

OTHER SIGNS

 NGP Areas


 Cacao

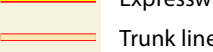
 Land limitation


 Land use

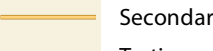
CONVENTIONAL SIGNS

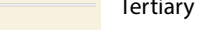
ROADS

 Expressway


 Trunk line

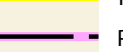
 Primary


 Secondary

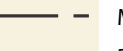
 Tertiary


BOUNDARY

 Region


 Province


 District

 Municipality


 Barangay

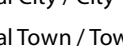
HYDROLOGY

 Sea / Shoreline

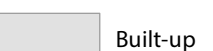
 Lakes / Rivers


PLACES


 Capital City / City

 Capital Town / Town

LAND USE

 Built-up

 Fishpond

 Mangrove

ADJOINING SHEETS

3921-I

3922-II 4022-III

3921-II 4021-IV

3921-III 4021-III

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DEPARTMENT OF AGRICULTURE

BUREAU OF SOILS AND WATER MANAGEMENT

SRDC Bldg., Elliptical Road Cor. Visayas Avenue, Diliman, Quezon City 1101

Tel/Fax No. : (+632) 332-9534 E-mail : bswmcenter@da.gov.ph

PROVINCE OF SOUTHERN LEYTE

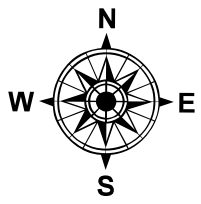
Sheet 3 of 8

Sheet No. 3921-I

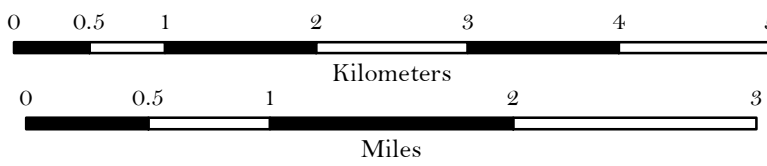


LAND SUITABILITY MAP CACAO

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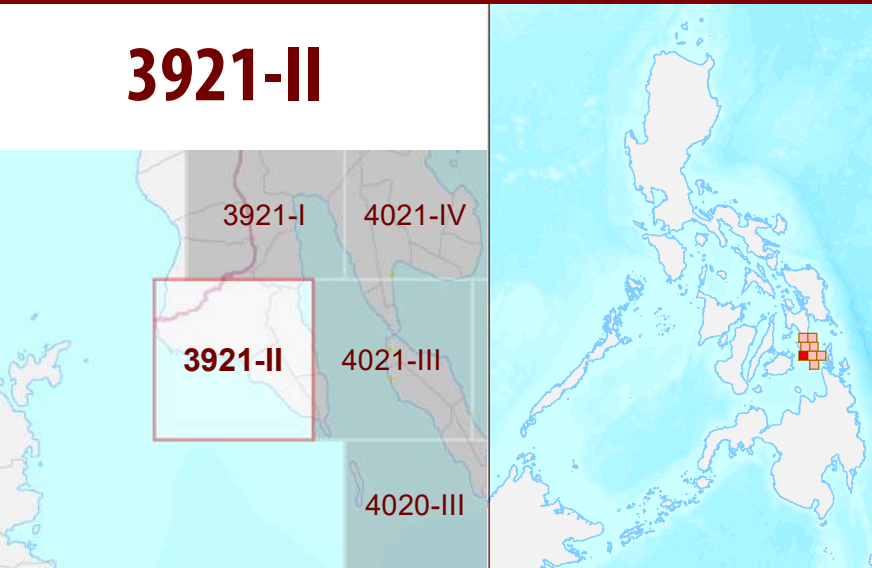
OTHER SIGNS

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- Land limitation
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CONVENTIONAL SIGNS

- ROADS**
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 - Region
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- HYDROLOGY**
 - Sea / Shoreline
 - Lakes / Rivers
- PLACES**
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 - Capital Town / Town
- LAND USE**
 - Built-up
 - Fishpond
 - Mangrove

ADJOINING SHEETS



MISCELLANEOUS INFORMATION

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Project Leader : BERNARDO B. PASCUA
GIS and Cartography : IRVIN K. SAMALCA

Funding Agency : Department of Agriculture - Bureau of Agricultural Research (DA-BAR)
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Local Government Unit (LGU) of covered provinces and municipalities

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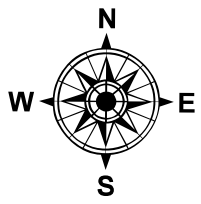
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BUREAU OF SOILS AND WATER MANAGEMENT
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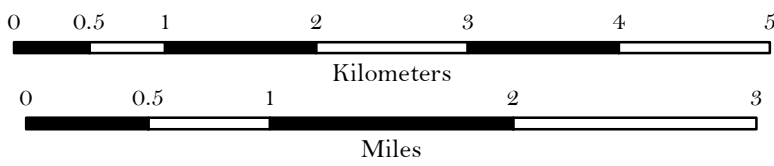


LAND SUITABILITY MAP
CACAO

LAND RESOURCES EVALUATION AND SUITABILITY
ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



Universal Transverse Mercator Zone 51 N, PRS 1992 Datum
DISCLAIMER : All political boundaries are not authoritative.

LEGEND

SUITABILITY CLASSES

- S1 Highly Suitable** - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level.
- S2 Moderately Suitable** - Land having limitations which in aggregate are moderately severe for sustained application of a given use; the limitations will reduce productivity or benefits and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on class S1 land.
- S3 Marginally Suitable** - Land having limitations which in aggregate are severe for sustained application of a given use and will so reduce productivity or benefits, or increase required inputs, that this expenditure will be only marginally justified.

Not Suitable/ Not Relevant

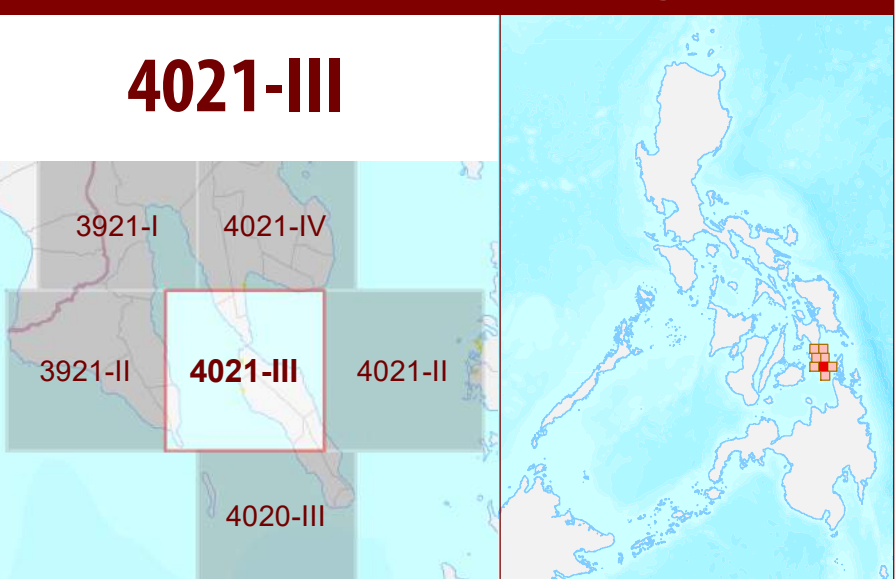
OTHER SIGNS

- NGP Areas
- Cacao
- Land limitation
- Land use

CONVENTIONAL SIGNS

- ROADS**
 - Expressway
 - Trunk line
 - Primary
 - Secondary
 - Tertiary
- BOUNDARY**
 - Region
 - Province
 - District
 - Municipality
 - Barangay
- HYDROLOGY**
 - Sea / Shoreline
 - Lakes / Rivers
- PLACES**
 - Capital City / City
 - Capital Town / Town
- LAND USE**
 - Built-up
 - Fishpond
 - Mangrove

ADJOINING SHEETS



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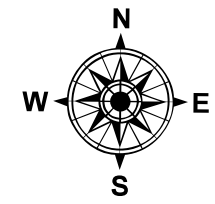
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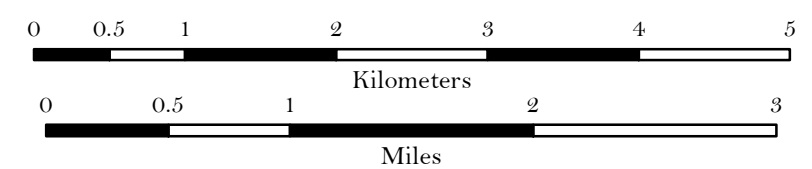
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BUREAU OF SOILS AND WATER MANAGEMENT
SRDC Bldg., Elliptical Road Cor. Visayas Avenue, Diliman, Quezon City 1101
Tel/Fax No. : (+632) 332-9534 E-mail : bswmclientcenter@da.gov.ph

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



Universal Transverse Mercator Zone 51 N. PRS 1992 Datum
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LEGEND

SUITABILITY CLASSES

- | | |
|----|--|
| S1 | Highly Suitable - Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level. |
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



☐ Not Suitable/ Not Relevant

OTHER SIGNS

-

CONVENTIONAL SIGNS


ROADS

-  Expressway
-  Trunk line
-  Primary
-  Secondary
-  Tertiary

BOUNDARY

- Region
 Province
-  Sea / Shoreline
 Lakes / Rivers

PLACES

- ★ Capital City / City
 ● Capital Town / Town

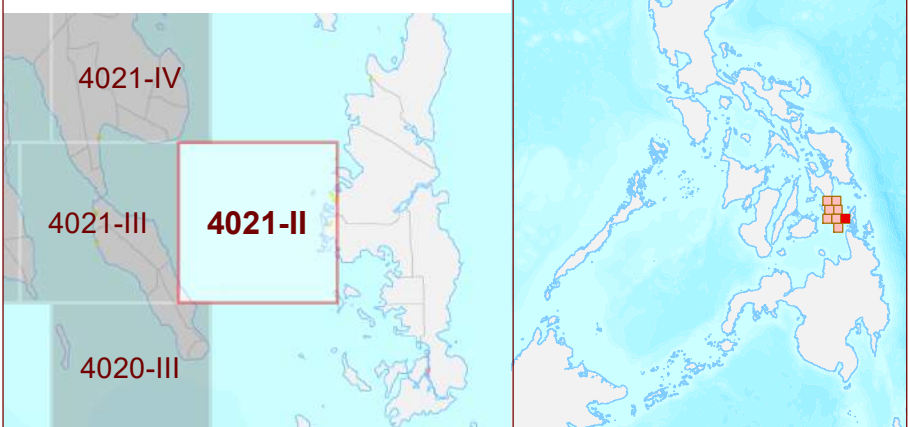
LAND USE

- Built-up Fishpond Mangrove

ADJOINING SHEETS

INDEX MAP

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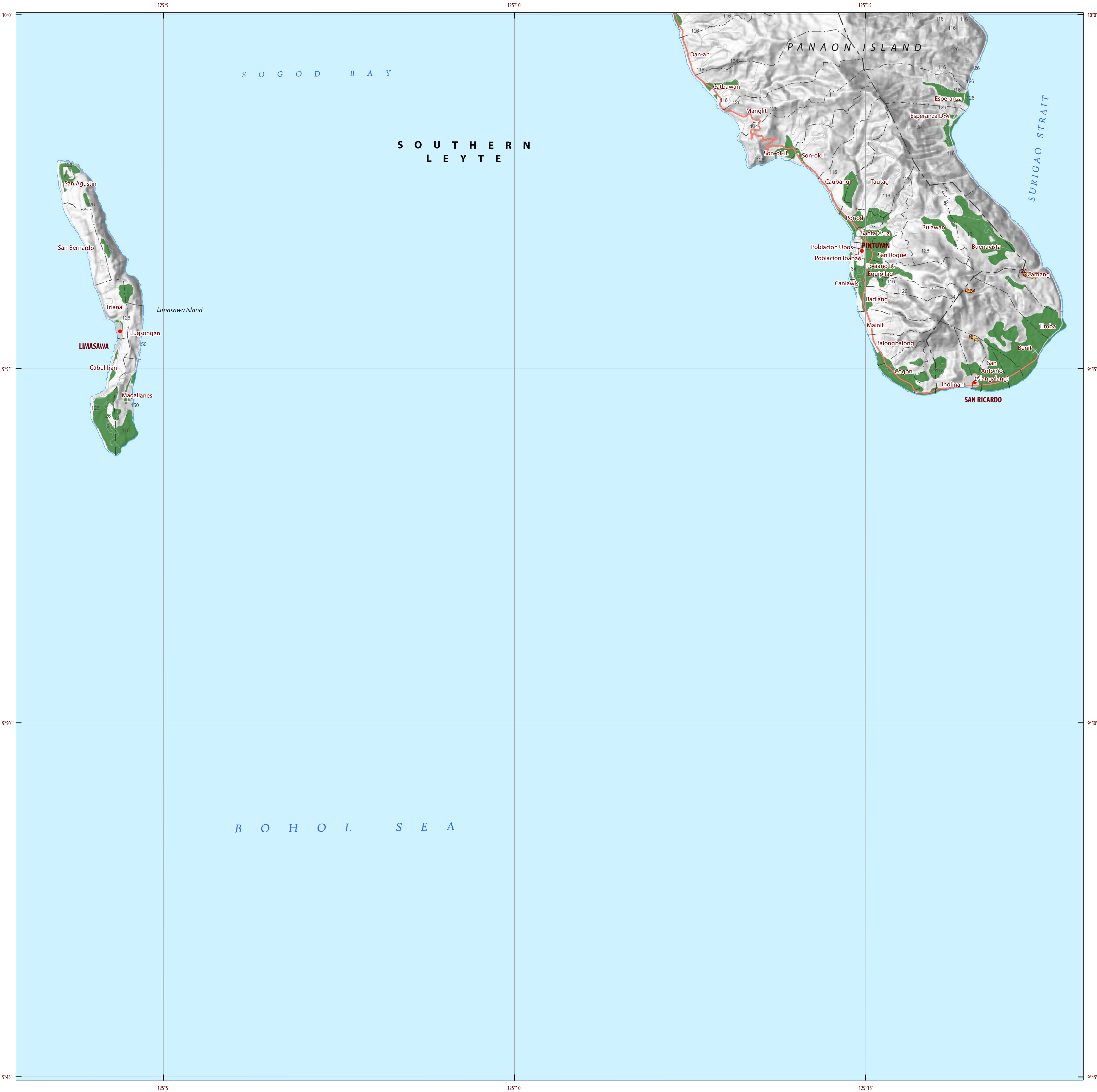
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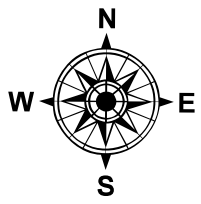
PROVINCE OF SOUTHERN LEYTE

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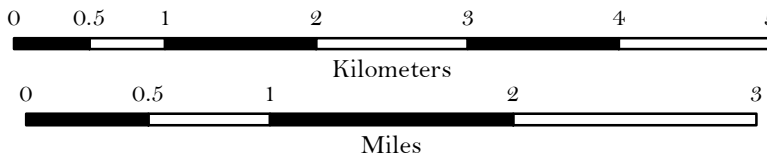


LAND SUITABILITY MAP CACAO

LAND RESOURCES EVALUATION AND SUITABILITY ASSESSMENT OF STRATEGIC PRODUCTION AREAS



SCALE 1 : 50 000



Universal Transverse Mercator Zone 51 N, PRS 1992 Datum
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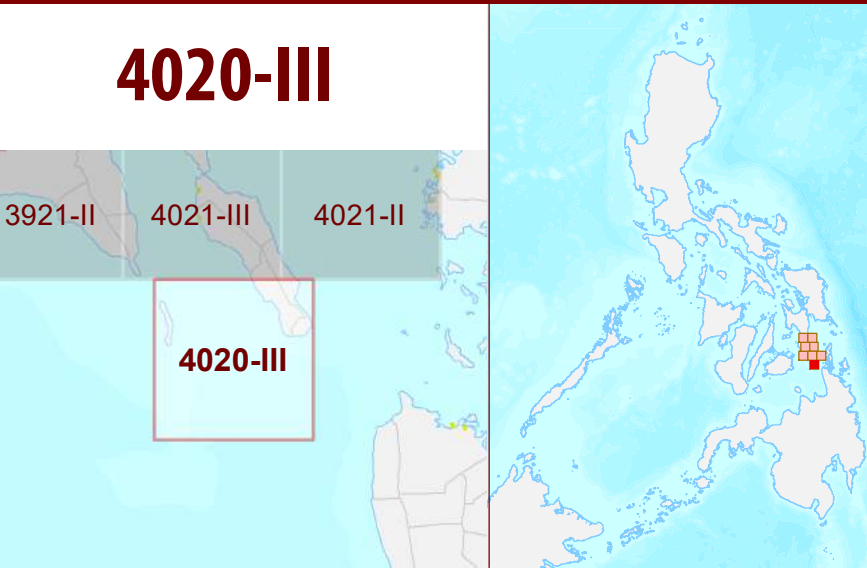
OTHER SIGNS

- NGP Areas
- Cacao
- Land limitation
- Land use

CONVENTIONAL SIGNS

- ROADS**
 - Expressway
 - Trunk line
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