

PN-777-101
ISBN-50135
9311229

**XIV INTERNATIONAL FORUM
ON SOIL TAXONOMY
AND AGROTECHNOLOGY TRANSFER**

Field Book



Mid-Forum Tour

PHILIPPINES

June 16-28, 1986

XIV INTERNATIONAL FORUM ON SOIL
TAXONOMY AND AGROTECHNOLOGY TRANSFER
FIELD BOOK

MARTIN E. PAYMUNDO

June 16-28, 1986

A C K N O W L E D G M E N T

The preparation of this field book for the XIV International (ASEAN) Forum on Soil Taxonomy and Agrotechnology Transfer was made possible through the support of the Philippine Council for Agriculture and Resources Research and Development (PCARRD) in cooperation with the Philippine Sugar Commission (PHILSUCOM) and the Ministry of Agriculture and Food in Region V? VI? VII and VIII in general and to the following workers in particular.

- Region VI - Mr. Pete Sangatnan, (Chief, Soil Services Section)
Mr. Manuel Reyes
Mr. Antonio Fornan
M. Truman Palmejar
Ed Gregorius
Julio Aldaba
Apolinario Sotomil
Dr. Ed Hombrebueno
Dr. Vicente Dosado
- Region VII - Director Bienvenido Almirante
Mr. Gene Fernandez (Chief, Soil Services Section)
Mr. Eduardo Alama
Mr. Roy Ochea
- Region VIII - Director Rufino Ayaso
Assistant Director Agapito Tauro
Assistant Director Roberto Quais
Mr. Simeon S. Maniego, Chief, Soil Services Section
Mr. Noel Tomanio
Mr. Fruto Adora
- Region V - Director Agustin Mago
Mr. Fulgencio A. Mella, Sorsogon Provincial
Executive Officer
Mr. Balagtas Torres, Chief for Operation Region V
Mr. Delfin Balmaceda

For their guidance and assistance in obtaining relevant information about the areas, the authors wish to express their profound gratitude.

The pedon descriptions and sample collection in Region VI, VII and VIII were conducted jointly by Dr. Ronald Yeck, Soil Conservation Service, USDA; Dr. Modesto Recel, Mr. Arturo Dayot and Mr. Crisostomo Alcalde of the Bureau of Soils Central Office; Dr. Betty del Rosario and Rodolfo Ilaog of PCARRD; and Dr. Rodrigo Badayos of UPLB with the assistance from the Regional Ministries of Agriculture and Food. The pedons in Region V are those characterized in the Benchmark Soils Project Sites and in the INSFER site.

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FIELD TOUR GROUPING
June 18-25, 1986

Field Demonstration:

1. Sara Series - Dr. Hari Eswaran
Assisted by: Esperanza Dacanay
2. Barotac Series - Dr. John Kimble
Assisted by: Eugenia Garcia
3. Alimodian Series - Mr. Arturo Dayot
Assisted by: Pruto Adora
4. Guimbalaon Series - Dr. Modesto Recel
Assisted by: Rafael Monte

Group I - Bago Series

Resource Person: Mr. Crisostomo Alcalde

Members:

Carlos Serrano
Tirso Perlas
Chen Zueng Sang

Group VI - Mandaue Series (Talisay)

Resource Person: Dr. Modesto Recel

Members:

Esperanza Dacanay
Juan Miranda
Peter Wong Fui Khiong

Group II - Tupi Series

Resource Person: Dr. Rodrigo Badayos

Members:

Rene Fernandez
Oscar Costelo
Chil, C.L.

Group VII - Maasin Series

Resource Person: Mr. William Herrera

Members:

Floricadel Lopez
Pruto Adora
Boonsompapunth Buree

Group III - Silay Series

Resource Person: Dr. Hari Eswaran

Members:

Ramoncito Pascual
Danilo Cabardo
Wilfredo Banacia

Group VIII - Series not define (Abuyog Site)

Resource Person: Mr. Crisostomo Alcalde/
Dr. Lek Mocharoen

Members:

Celso Bersaba
Eduardo Alama
Charoenphong Suraphol

Group IV - Isabela Series

Resource Person: Dr. Rodrigo Badayos

Members:

Celestino Barile
Freddie Magana
Marcelino Ipabon

Group IX - Dolongan Series

Resource Person: Dr. Modesto Recel

Members:

Eugenia Garcia
Kundo Pahm
Leo Retamar
Krishna Karki

Group V - Mandaue Series (Compostela)

Resource Person: Mr. Arturo Dayot

Members:

Virgilio Castañeda
Alejandro Orani
Guo, H.Y.

Group X - Catbalogan Series

Resource Person: Dr. Hari Eswaran

Members:

Rafael Monte
Ceferino Tolentino
Reinerio Perez
Patrice Lawang

Group XI - Sorsogon Series

Resource Person: Mr. Arturo Dayot

Members:

Felixberto Orlanes
Cristobal Lopez
Sulpicio Jose
Alain Beaudon

Group XIII - Isarog Series

Resource Person: Dr. Modesto Recel/
Dr. Bernardino Tagawan

Members:

Tirso Perlas
Ceferino Tolentino
Pruto Adora

Group XII - Castilla Series

Resource Person: Mr. Crissostomo Alcalde

Members:

Carlos Serrano
Oscar Costelo
Antonio Narciso
Sinasamy Nadasan

SCHEDULE FOR THE FIELD TOUR
XIV INTERNATIONAL FORUM ON SOIL TAXONOMY AND
AGROTECHNOLOGY TRANSFER

June 18-25, 1986

D A T E	D E P A R T U R E		A R R I V A L		S T O P	DISCUSSION TIME	S E R I E S N A M E
	T I M E	P L A C E	T I M E	P L A C E			
June 18	0730	Iloilo City	0830	Ajuy, Iloilo	Pedon 1	0830 - 1000	Sara Series
	1030	Ajuy, Iloilo	1100	Barotac Nuevo, Iloilo	Pedon 2	1100 - 1230	Barotac Series
	1330	Barotac Nuevo, Iloilo	1430	Cabatuan, Iloilo	Pedon 3	1430 - 1600	Alimodian Series
	1630	Cabatuan, Iloilo	1730	Sarabis Manor	-	-	-
June 19	0630	Iloilo City	0900	Bacolod Feat	-	-	-
	0930	Bacolod Port	1100	La Granja	Pedon 4	1100 - 1200	Guimbalaon Series
	1300	La Granja	1340	Busay, Bago City	Pedon 5	1340 - 1500	Bago Series
	1500	Bago City	1530	Granada	Pedon 6	1530 - 1630	Tupi Series
	1700	Granada	1730	Sugarland Hotel	-	-	-
June 20	0700	Bacolod City	0800	Silay City	Pedon 7	0800 - 0930	Silay Series
	0930	Silay City	1230	San Carlos City	-	-	-
	1330	San Carlos City	1400	Hda. San Jose	Pedon 8	1400 - 1600	Isabela Series
	1600	Hda. San Jose	1630	Cocogrove Hotel	-	-	-
June 21	0500	San Carlos City	0800	Toledo City	-	-	-
	0900	Toledo City	0900	Skyview Hotel	-	-	-
	0900	Cebu City	1100	Compostela	Pedon 9	1100 - 1300	Mandaue Series
	1400	Compostela	1530	Talisay	Pedon 10	1530 - 1630	Mandaue Series
	1630	Talisay	1700	Cebu City	-	-	-
	2000	Cebu City					
June 22			0400	Ormoc City	-	-	-
	0400	Ormoc	0530	Baybay	-	-	-

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DATE	DEPARTURE		ARRIVAL		STOP	DISCUSSION TIME	SERIES NAME
	TIME	PLACE	TIME	PLACE			
June 23	0700	VISCA	0730	Baybay	Pedon 11	0730 - 0930	Maasin Series
	0930	Baybay	1030	Abuyog, Leyte	Pedon 12	1030 - 1130	Not Defined
	1130	Abuyog	1230	Tacloban	-	-	-
	1300	Tacloban	1430	Basey, Samar	Pedon 13	1430 - 1530	Dolongan Series
	1530	Basey, Samar	1630	Sta. Rita, Samar	Pedon 14	1630 - 1730	Catbalogan Series
	1730	Sta. Rita, Samar	1830	Tacloban	-	-	-
	2000	Tacloban					
June 24			0800	Casiguran, Sorsogon	Pedon 15	0800 - 0930	Sorsogon Series
	0930	Casiguran	1030	Pilar, Sorsogon	Pedon 16	1030 - 1200	Castilla Series
	1200	Pilar	1300	Legazpi Plaza	-	-	-
June 25	0730	Legazpi	0930	Naga City	Pedon 17	0930 - 1100	Isarog Series
	1300	Naga	1500	Legazpi City	-	-	-
	1800	Legazpi	1900	MDA			
	1920	MDA	1935	Miramar House			
	2035	Miramar	2200	Los Baños City of Springs			

Tour Guidelines:

1. Participants are enjoined to be attired appropriate for field trips where everyone is expected to go inside the pits in the course of study.
2. June is the start of wet months typhoons may come in Region VIII and V.
3. First aid kits are provided, but have with you medicines that you normally have to take.
4. Participants who suffer from conveyance sickness in windin roads, boats or planes should inform the coordinator for medicines they need.

I N T R O D U C T I O N

As part of the Forum, a field tour and visitation is scheduled on June 18-25, 1986. This is intended to provide participants a brief insight into the soils and agriculture in some parts of the Philippines through actual visits and field practice. This will also provide an opportunity for dialogue between agronomists and for sharing each others experiences.

This field book discusses briefly the climate, landforms, geology, soils and land use in the four geographical areas covered by the tour (Figure 1). Some details are discussed for the areas to be seen along the route and a more detailed description of the soil profile prepared in designated stop points is included. This includes soil descriptions, laboratory data and in some instances the layouts of existing experiments and/or results of previous studies.

The field tour during the XIV International (ASEAN)/Forum on Soil Taxonomy and Agrotechnology Transfer involves study areas over 4 geographic/administrative regions, namely: Region VI, Western Visayas; Region VII, Central Visayas; Region VIII, Eastern Visayas; and Region V, Bicol Region. The presentation of relevant information follows the order by which the regions will be traversed. The 1980 statistics on population in comparison with the land area are presented in the following table.

Table 1. Population statistics by region, 1980 and comparative land areas

	W. VISAYAS REGION VI	C. VISAYAS REGION VII	E. VISAYAS REGION VIII	BICOL REGION V
POPULATION (M)	4.98	5.42	2.80	3.48
Population Density/km ²	263	332	131	197
Population Growth	1.78	1.82	1.50	1.74
Land Area (M ha)	1.874	1.495	2.143	1.763

The Western Visayas Region has 6 chartered cities: Iloilo City and Roxas City in Panay; and Bacolod, Bago, Silay, La Carlota, Cadiz and San Carlos Cities in Negros Occidental. Central Visayas has 10 cities namely: Canlaon City, Bais City and Dumaguete City in Negros Oriental; Cebu, Mandaue, Lapu-lapu, Danao, Toledo and Bogo Cities in Cebu; and Tagbilaran City on Bohol. Eastern Visayas has only Ormoc City, and Tacloban City in Leyte and Calbayog City in Samar. Legazpi City in Albay, Iriga City and Naga City in Camarines Sur are the three chartered cities in Bicol Region.

As in most parts of the country the regions traversed has a good number of government and private academic institutions. The University of the Philippines has the Iloilo and Tacloban Campuses. Visayas State Agricultural College (VISCA) in Eastern Visayas, the Central Philippine University in Iloilo and the Bicol University College of Agriculture are the foremost agricultural institutions in these regions. Aside from these, each province has a government agricultural school, most of which have collegiate curricula. Private universities, many of which are operated by religious groups and many technical schools contribute to the trained manpower pool of the country.

All the major islands in the Visayas, except the island province of Siquijor are accessible by air transport and perishable products like fish and fruits which are in demand in Manila markets are transported by air. Ships transport products and passengers to and from Manila; between and among the islands in the Visayas at regular schedules and at much cheaper costs than air.

Iloilo, Cebu, and Tacloban are the main sea ports of their respective regions, but Cebu is more strategically and centrally located. It links many of the Central and Southern Philippine provinces not directly serviced by air or ships from Manila.

Eastern Visayas Region is also accessible from Mindanao and from Manila through the Bicol Region by the Pan Philippine Highway.

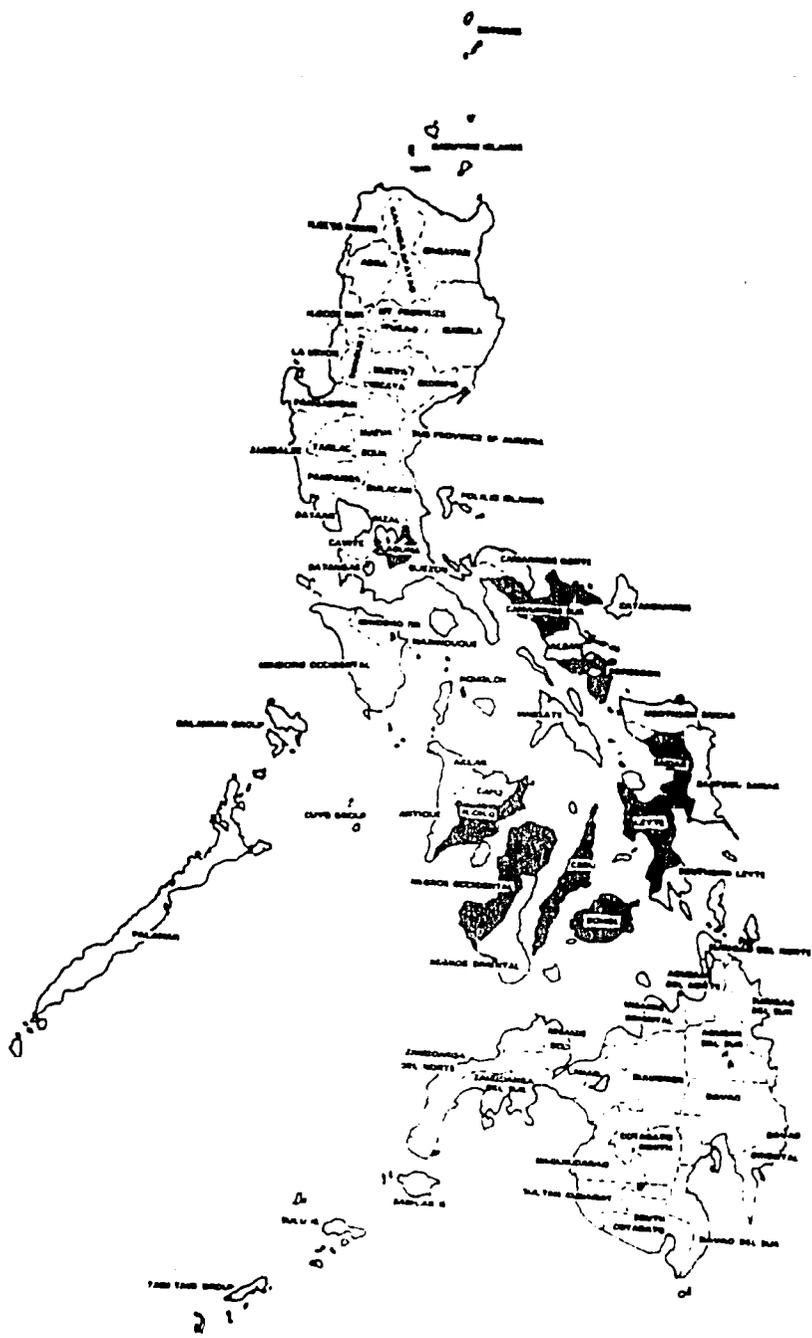


Figure 1. Map of the Philippines showing provinces (darkened area) to be covered by the tour.

WESTERN VISAYAS

Region VI

Western Visayas is composed of 5 provinces: Antique, Aklan, Capiz, Iloilo (which include Guimaras Island) in the Island of Panay and Negros Occidental which occupy the Northern and Western section of the Island of Negros (Figure 2). These provinces are bounded together by a common written Language, Ilongo (Hiligaynon) but Antique, Aklan, and Capiz have their own dialects.

Geologically, Panay Island's oldest formations are meta sediments and metavolcanics of Cretaceous to Paleocene age and are on the mountain range that separates the province of Antique from the other provinces (Figure 3). Paleocene to Oligocene volcanic and sediments of andesites and basalts are in the northeastern section of the island circumscribing an area of dioritic and granodioritic intrusives. These formations also occur in the island of Guimaras and at the southern section of Negros Occidental.

In Panay, the areas under intensive cultivation are mainly on the Quarternary alluvial and lacustrine deposits; less in Pliocene and Pleistocene sediments and least in upper Miocene sediments and volcanics. The agriculturally productive areas in Negros Occidental are on Pliocene and Pleistocene volcanics and the alluvial materials derived from them. Kanlaon Volcano (8,100 ft.), Mt. Mandalagan and Mt. Silay are the sources of recent volcanic deposits. The intrusives and old meta volcanics and meta sediments at the south are much less productive. Figure 4 shows the soil map and location of pedons in Region VI.

Climatic data such as rainfall pattern (Figure 5), mean monthly rainfall, mean daily relative humidity, mean daily temperature, solar radiation and total monthly rainfall (Tables 1, 2, 3, 4) are also shown.

Because of Population pressure, the steeper hillside and mountain slopes of the intermediate uplands and mountains are fast becoming denuded, first by exploitive logging operations and later by the shifting slash-and-burn farming system. Abandonment of non-productive hilly areas result to the savannah-like situation, stewardship contract is an approach being tested to allow landless rural population to utilize the "forest lands" for food production while they establish permanent trees (orchards) or reforest the area which later will be their source of income and livelihood.

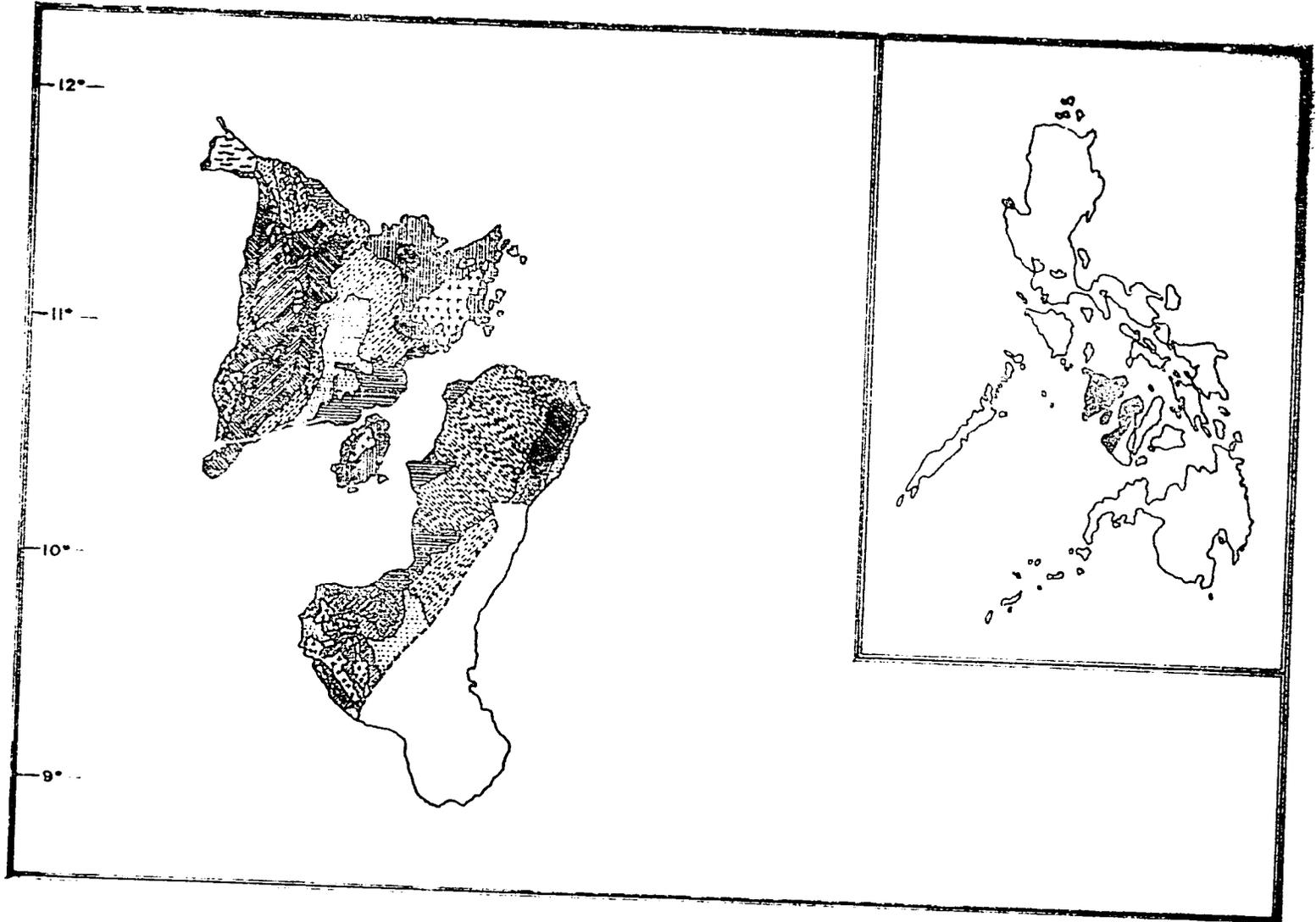
Iloilo is the major supplier of rice for the region while Negros Occidental is the major sugarcane producing province. Rice and sugarcane are also grown in Antique, Aklan, and Capiz mainly for local consumption. Capiz supplies some canes to the mills in Iloilo. Wetland rice is grown in lesser extent although increasing at present in Negros, and in other provinces on less extensive alluvial plains and narrow intervening valleys in the hilly and mountainous areas. Upland rice is generally grown in the hilly areas. Coconuts are grown in relatively small groves in Negros and Iloilo level areas, but they occupy considerable portions of the rolling and hilly areas of Antique, Aklan, and Capiz and in many of the beach sand areas.

Soil Map of Region VI (Antique, Capiz, Iloilo, and Negros Occidental)

Legend:

1 - Hydrosol	219 - Patnongon SCL
16 - Bantog CL	221 - Makato C
42 - Obando S	222 - Sigcav C
45 - Mountain Soil, Undiff.	223 - Sapian C
95 - San Manuel FSL	225 - Alimodian SC
100 - Umingan SL	226 - Sta. Rita SL
118 - Beach Sand	228 - Bantog C
119 - Sta. Rita CL	236 - San Manuel C

Figure 3. Geologic map of Western Visayas Region.



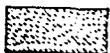
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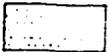
LEGEND:



QUATERNARY ALLUVIAL, LACUSTRINE, BEACH & RESIDUAL DEPOSITS.



PLIOCENE, PLEISTOCENE & RECENT VOLCANIC DEPOSITS; MOSTLY ANDESITES & BASALTS WITH ASSOCIATED DACITES & RHYODACITES IN PLACES, OCCURRING MAINLY AS LAVA FLOWS IN VOLCANIC CENTERS & PYROCLASTICS IN THEIR APRONS. OXILINE-PYROXENE BASALT CONSTITUTE LARGELY THE LANAO - BUKIDNON VOLCANIC PLATEAU.



PLIOCENE TO PLEISTOCENE SEDIMENTS BOTH MARINE & TERRESTRIAL, INCLUDES EXTENSIVE REEF LIMESTONE & WATER-LAID PYROCLASTICS; ALSO LOCALIZED TERRACE GRAVEL DEPOSITS.



UPPER MIOCENE SEDIMENTS & VOLCANICS; LARGELY MARINE CLASTICS, REEF LIMESTONE & ANDESITIC-BASALTIC PYROCLASTICS & LAVAS.



LATE Oligocene TO MIDDLE MIOCENE SEDIMENTS & VOLCANICS; MAINLY MARINE SANDSTONE, SHALE & REEF LIMESTONE; SOME CONGLOMERATE, COAL MEASURE & MARINE ANDESITIC-BASALTIC PYROCLASTICS & LAVAS.



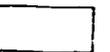
PALEOCENE TO Oligocene SEDIMENTS & VOLCANICS; MAINLY MARINE SANDSTONE, SHALE & LIMESTONE; DACITE & ANDESITE LAVAS & PYROCLASTICS IN CATANDUANES, SOUTHERN SIERRA MADRE & EASTERN MINDANAO; MAINLY ARKOSIC & QUARTZITIC SHALE & SANDSTONE IN MINDORO & PALAWAN.



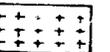
UNDIFFERENTIATED CRETACEOUS TO PALEOGENE STRATA; COMMONLY MAPPED AS METAVOLCANICS & METASEDIMENTS CONSISTING MAINLY OF SPLITES, CHERT, PELAGIC TO HEMIPELAGIC SEDIMENTS & TURBIDITES.



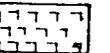
CRETACEOUS SEDIMENTS & VOLCANICS, MAINLY UPPER CRETACEOUS SPILITIC TO NON-SPILITIC BASALT, ANDESITE, CHERT, PELAGIC TO HEMIPELAGIC SEDIMENTS, TURBIDITES, LIMESTONE, SANDSTONE & SHALE; LOWER CRETACEOUS CONSTITUTE THE BULK OF THE CRETACEOUS IN CEBU BUT HAS NOT BEEN REPORTED IN OTHER AREAS.



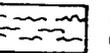
CARBONIFEROUS TO JURASSIC RADIOLITE, SANDSTONE, SHALE, LIMESTONE & CONGLOMERATE REGIONALLY METAMORPHOSED TO QUARTZITE, SLATE, PHYLLITE, MARBLE & MICA SCHIST; LIMITED TO MINDORO, ROMBLON ISLAND GROUP, BURUANGA PENINSULA, CUYO ISLAND, BURUANGA ISLAND GROUP, NORTHERN PROBABLY ZAMBOANGA PENINSULA.



INTERMEDIATE TO ACID; MAINLY DIORITE, GRANODIORITE, QUARTZ DIORITE & MONZONITE; TONALITE, ADEMELLITE, GABBRO, SYENITE & GRANITE & LOCALIZED FACIES.



BASIC & ULTRABASIC; MAINLY PERIDOTITE, DUNITE & LAYERED GABBRO. PERIDOTITE & DUNITE ARE GENERALLY SERPENTINIZED; TROCTOLITE, NORITE, TRONDJHEMITE.



SCHIST, PHYLLITE, GNEISS, MARBLE & QUARTZITE RANGING FROM THE GREENSCHIST TO PYROXENITE FACIES (COLOR FOLLOWS AGE OF ORIGINAL ROCK)

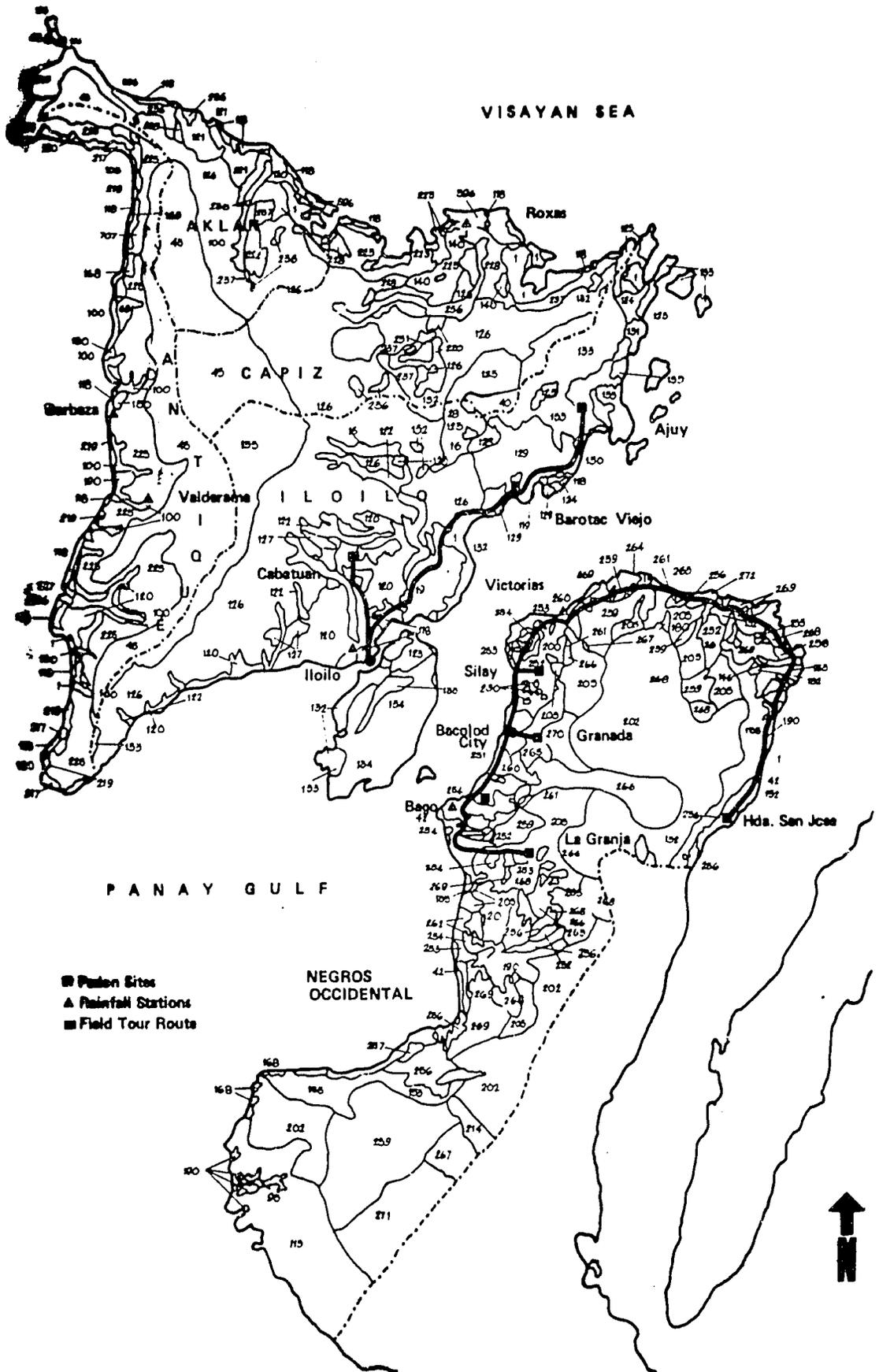
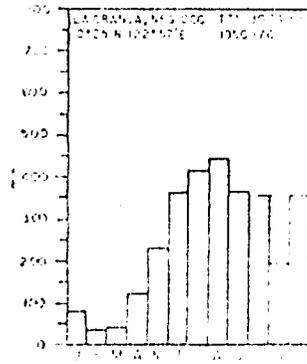
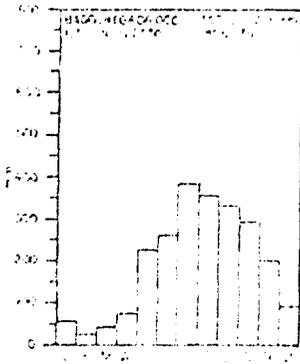
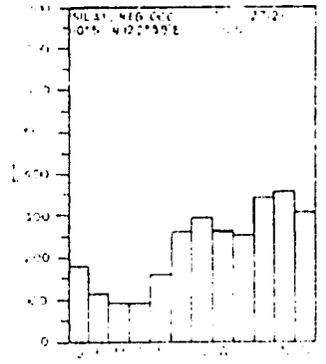
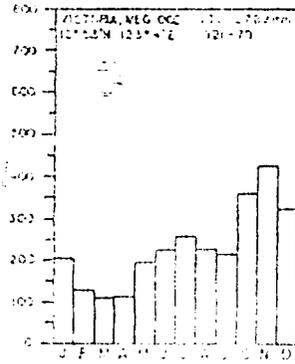
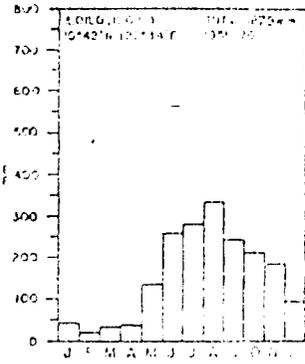
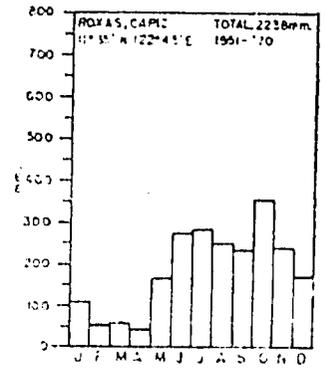
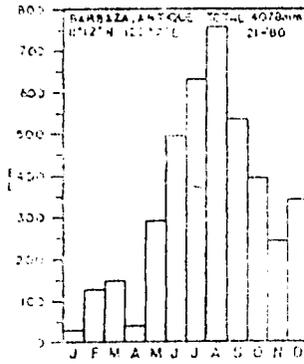
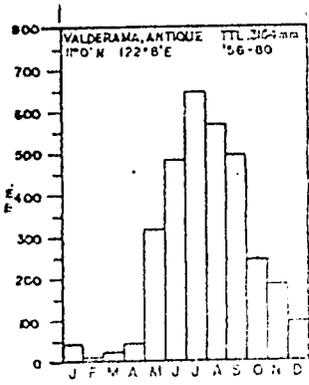


Figure 4. Soil map of Western Visayas, Region VI, Philippines, showing also the locations of the pedon sites

Figure 5. Rainfall pattern in Western Visayas Region.



120 - Sta. Rita CL	237 - Sara C
121 - Bauang CL	239 - Luisiana C
122 - Umingan fSL	251 - Silay SL
123 - Sara SiL	252 - Silay fSL
124 - Sara SiL	253 - Silay L
125 - Alimodian-Barotac Complex	254 - Silay L
126 - Alimodian CL	255 - Pulupandan SL
127 - Alimodian SiL	256 - Isabela C
128 - Luisiana L	257 - Isabela SL
129 - Barotac L	258 - Faraon SL
130 - Barotac L. (Roll)	259 - Bantay CL
131 - Barotac CL	260 - Bago fSL
132 - Faraon C	261 - Bago L
133 - San Rafael L	262 - Bago SCL
134 - Guimaras L (Gr)	263 - Victorias CL
135 - Alimodian Soils, Undiff.	264 - Cadiz L (Gr)
140 - Luisiana CL	265 - Guimbalaon fSL
153 - Bolinao C	266 - Guimbalaon L
155 - Faraon C	267 - Guimbalaon L (Gr)
168 - Umingan CL	268 - La Castellana CL
190 - San Manuel L	269 - Tupi fSL
200 - Maligaya C	270 - Tupi fSL
202 - Fough Mountainous Land	271 - Tupi SiL
205 - Guimbalaon C	272 - Manapla-Bago Complex
214 - Batuan C	596 - San Manuel SCL
217 - Magcalon SL	797 - Alimodian-Bolinao Complex

Table 1a. Total Monthly Rainfall (mm/mo.) at La Granja Research Center, La Granja, La Carlota.

M O N T H	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
January	-	59.3	23.4	216.9	15.7	79.5	60.6	29.8	68.6	221.2
February	-	62.0	56.5	34.0	25.5	19.3	8.2	28.0	1.3	105.5
March	-	79.7	13.7	3.8	24.2	213.5	18.8	154.4	Trace	68.3
April	-	131.4	9.3	165.6	109.6	15.7	129.9	85.1	Trace	223.9
May	300.5	604.1	65.8	112.8	190.5	48.9	226.0	249.5	95.6	271.5
June	357.7	263.0	341.4	254.7	398.2	709.2	268.3	604.7	162.4	572.1
July	548.2	287.3	774.3	159.3	719.0	331.4	126.2	477.9	472.5	245.6
August	422.0	441.0	406.2	386.1	411.4	346.9	373.6	421.5	198.0	422.5
September	251.5	543.0	430.3	324.0	322.9	404.3	428.2	229.6	309.0	473.0
October	323.0	243.0	220.1	438.7	465.7	255.9	453.5	232.5	225.7	283.1
November	83.6	202.6	154.1	138.9	52.5	261.7	159.1	85.4	260.6	207.5
December	195.0	155.8	1.7	75.7	63.3	83.0	66.6	75.7	143.3	98.2

- No data available

Trace = less than 0.1 mm

Table 1b. Mean Daily^{a/} Relative Humidity (%) for each Month at La Granja Research Center, La Granja, La Carlota

M O N T H	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
January	-	85/69	83/67	85/66	80/59	85/72	84/68	81/64	30/60	85/71
February	-	82/62	93/67	83/65	79/57	81/56	82/58	84/63	73/49	86/66
March	-	80/49	80/57	76/56	74/55	76/55	76/62	78/57	68/49	81/65
April	-	75/62	78/51	75/60	77/60	77/58	74/61	77/67	63/45	78/72
May	85/85	82/75	73/59	79/67	75/71	76/67	79/72	78/75	69/54	80/78
June	90/95	87/73	82/81	80/76	83/75	85/88	82/77	83/80	75/70	81/79
July	83/79	85/77	83/82	81/75	86/81	85/76	82/75	84/73	84/79	81/76
August	84/76	85/80	85/78	77/80	83/77	85/75	83/71	81/71	82/76	84/76
September	83/83	84/78	88/83	83/79	82/77	83/77	83/81	81/76	81/78	82/82
October	83/78	82/76	82/71	85/81	83/76	82/80	83/81	79/69	81/78	85/78
November	78/68	84/73	81/74	82/71	82/69	83/76	85/77	80/68	84/78	84/77
December	88/75	86/74	80/61	84/71	81/63	86/75	82/67	81/65	86/76	86/73

a/

8 a.m./2 p.m.

- No data available

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Table 1c. Mean Daily Temperature for each Month at La Granja Research Center, La Granja, La Carlota.

M O N T H	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
January	-	25.3	26.6	25.1	25.8	25.9	25.1	25.5	26.7	26.4
February	-	25.2	25.9	25.4	26.9	26.1	26.2	26.1	26.7	26.3
March	-	26.6	27.2	27.7	27.3	26.8	27.4	27.3	28.4	27.6
April	-	27.6	28.2	28.4	28.3	27.8	27.6	28.8	29.6	28.5
May	26.8	15.9	18.8	18.7	28.0	28.1	29.9	28.2	30.5	28.7
June	26.7	26.5	27.2	27.4	27.5	26.9	27.3	27.7	29.2	27.6
July	26.2	26.6	25.4	27.4	27.2	26.9	27.1	26.7	27.8	27.8
August	26.7	25.2	25.7	26.6	26.5	26.7	27.2	27.1	28.3	27.5
September	26.6	26.2	26.2	26.6	27.2	27.1	27.1	27.0	27.9	27.4
October	26.6	27.0	26.7	26.6	26.9	27.0	27.0	27.3	27.8	27.4
November	26.5	26.5	26.5	26.7	27.1	26.8	26.1	27.3	27.2	27.2
December	25.9	26.2	26.0	26.5	25.8	26.3	25.8	27.1	26.5	26.6

Mean temperature = $\frac{\text{Maximum temperature} + \text{minimum temperature}}{2}$

Table 1d. Solar Radiation (total langley/month) at La Granja Research Center, La Granja, La Carlota

M O N T H	1977	1978	1979	1980	1981	1982	1983	1984	M E A N
January	-	3,112	8,471	6,572	5,969	5,976	7,153	9,817	240
February	-	3,441	8,381	7,569	6,663	5,319	8,036	9,293	274
March	11,436	11,116	9,346	8,861	8,397	7,135	7,598	11,881	305
April	11,184	10,672	-	8,278	8,052	7,764	-	11,439	319
May	11,358	11,262	-	8,580	7,345	7,089	-	11,419	297
June	-	3,540	7,823	6,534	7,374	6,199	-	10,043	250
July	8,368	10,034	7,093	7,930	7,407	6,747	-	11,602	272
August	8,750	7,643	7,945	7,619	7,441	6,253	-	10,117	256
September	7,192	8,499	5,979	6,630	6,383	5,340	10,244	9,412	248
October	9,182	7,334	5,364	6,777	6,498	6,405	10,510	9,770	249
November	8,099	5,527*	6,258	6,563	5,862	6,138	9,298	9,112	244
December	3,918	7,441	6,803	5,993	5,792	5,526	9,010	3,791	281

*7 days w/o data.

- No data collected, instrument out of order.

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Table 2. Total monthly rainfall (-m) for Ma-ao mill district from 1972-1994^{a/}

Pedon site: Hacienda Macon, Busay, Iago City

M O N T H	1972	1973	1974	1975	1976	1977	1978	1979 ^{b/}	1990	1981	1992	1993	1994
January	231.0	11.9	35.00	174.7	23.70	37.50	213.30	-	69.00	48.3	29.1	35.5	22.00
February	5.0	13.20	34.10	17.40	2.90	29.60	13.20	-	8.33	5.4	1.5	1.2	26.4
March	37.3	7.20	6.90	16.20	19.20	14.40	0.0	-	120.7	5.7	116.5	0.9	138.6
April	1.4	14.20	15.40	79.60	17.70	13.20	136.90	-	10.67	26.3	74.7	Trace	27.3
May	109.3	71.20	146.70	293.00	442.30	24.40	39.10	-	120.53	264.6	224.6	69.6	380.6
June	317.2	244.70	262.40	311.20	246.20	289.50	32.60	-	572.73	263.3	467.5	172.6	441.3
July	272.2	350.40	444.10	331.30	330.90	616.40	231.00	-	288.93	254.0	339.3	444.3	99.0
August	243.4	336.00	353.20	409.60	312.30	445.70	391.10	-	275.9	319.3	328.8	226.3	501.1
September	513.0	306.00	167.00	110.00	528.20	436.40	155.50	-	263.73	363.1	340.3	365.7	447.1
October	209.0	396.40	431.90	356.80	176.40	191.20	305.30	-	357.70	353.0	170.0	219.9	331.0
November	125.4	557.70	150.00	54.60	136.50	104.30	2.40	-	11.33	88.50	16.9	265.6	70.2
December	84.0	158.80	170.30	156.20	88.90	2.60	73.1	-	77.5	91.30	20.6	112.4	10.3
T O T A L	2150.4	2467.60	2267.40	2321.60	2275.80	2205.40	1944.40	-	2380.9	2075.3	2132.0	1913.4

^{a/} Source of data: PHILSUCOM Development Office, La Granja, La Carlota City/

^{b/} No data available

Table 3. Total monthly rainfall (mm) in Bacoled-Murcia, Talisay-Silay and First Farmers will districts from 1972-1984^{a/}

Padon sites: Hacienda Carmen, Granada, Bacoled City and Hacienda Fuyas, Silay City

M O N T H	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
January	337.5	8.20	180.30	271.90	252.40	142.40	185.20	130.5	147.17	78.1	127.4	0	121.0
February	11.5	43.50	37.50	169.50	122.00	159.50	59.40	82.7	67.80	60.9	83.2	0	124.7
March	78.2	29.80	163.90	25.00	48.00	104.30	0.0	0.0	153.90	0.0	110.1	0	117.4
April	3.5	1.60	0.0	136.50	34.70	0.0	40.80	86.7	27.57	0.0	59.0	0	22.8
May	133.1	52.60	253.20	274.40	379.50		75.10	160.4	77.35	199.5	158.8	23.1	319.5
June	434.1	303.40	562.70	522.30	336.10	330.40	271.73	217.2	436.27	234.8	425.4	137.0	235.30
July	430.3	466.20	253.30	248.70	325.20	375.40	134.0	553.6	413.27	163.0	200.4	321.7	39.3
August	228.8	540.11	318.10	124.20	286.90	377.90	178.2	313.2	328.37	228.9	261.3	324.7	307.4
September	273.6	494.60	329.60	322.40	227.40	614.10	219.4	160.4	466.17	312.5	213.4	467.9	230.2
October	37.3	236.11	753.10	439.00	217.90	152.20	232.4	404.6	610.55	478.10	16.4	234.0	301.3
November	120.0	536.00	242.70	182.10	214.90	128.40	130.0	149.4	435.60	458.8	135.1	430.7	405.8
December	154.0	618.30	393.20	318.00	379.70	433.20	151.4	113.4	206.0	243.9	28.9	-	353.2
T O T A L	2380.4	3332.2	3527.6	3095.80	2825.80	3020.70	1750.0	2392.1	3353.02	2363.4	1800.1	1942.1	2595.2

a/
Source of data. PHILSUCOM Development Office, La Granja, La Carlota.

Table 4. Total monthly rainfall (mm) for San Carlos mill district from 1972-1984^{a/}

Pedon site: Hacienda San Jose, San Carlos City

M O N T H	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
January	298.3	26.41	76.74	212.85	145.28	108.45	130.45	15.5	37.39	98.5	17.8	42.8	108.3
February	21.5	40.13	71.88	100.59	48.00	127.50	24.67	60.8	65.53	39.9	34.0	15.6	96.1
March	137.7	20.32	60.19	23.36	39.87	42.41	4.26	12.4	129.59	14.8	156.5	3.0	55.4
April	43.7	49.99	35.81	122.42	77.97	25.05	159.54	90.1	36.04	19.6	25.5	0.6	70.3
May	319.7	31.75	108.45	76.64	203.70	25.90	123.21	123.4	44.21	46.9	147.0	5.0	139.1
June	121.6	118.36	153.67	159.51	92.45	226.58	203.00	224.5	302.03	53.5	133.0	136.1	214.0
July	80.1	331.47	86.96	161.86	212.34	230.37	168.00	177.1	178.07	78.3	136.0	209.6	175.7
August	142.3	146.81	84.83	47.24	154.43	48.27	45.00	113.5	194.16	149.2	276.3	162.7	151.3
September	257.6	298.95	59.24	101.34	241.80	145.08	176.20	112.8	253.57	170.0	121.0	303.3	191.8
October	87.7	148.98	330.70	208.53	133.05	100.72	207.2	284.9	175.67	226.1	221.6	270.7	237.9
November	235.9	393.70	104.30	129.03	226.31	110.49	235.3	120.4	145.0	288.0	101.2	244.3	273.2
December	144.1	377.93	313.18	236.47	192.02	44.45	143.7	78.7	92.0	219.3	49.4	163.3	192.5
T O T A L	1681.12	1984.42	1488.64	1599.83	1767.22	1246.22	1462.18	1423.1	1703.3	1405.9	1711.6	1558.4	1965.0

^{a/} Source of data: PHILSUCOM Development Office, La Granja, La Carlota.

Innovations in agriculture practices have been recently developed. The Kabsaka Project, a farming system innovation, enables rice farmers to produce more than one rice crop a year even under rainfed conditions by the introduction of early maturing non-photosensitive modern rice varieties. Coupled with supplemental irrigation from small water impounding structures and development of irrigation systems two crops of rice and an upland crop during the dry season have intensified crop production in the Province of Iloilo. This system are now practiced in many of the other regions of the country with similar agro-environments.

Hilly land farming systems are also being developed initially in the mountainous areas between Iloilo and Antique provinces. Contour cultivation, hedges and bunds are being demonstrated as soil conservation measures for farmers adoption.

Table 5 shows results of experiments in 1983 in Sara and Guimbalon soils. While, Table 6 are experimental results of crop production in La Granja.

Off shore fishing and coastal fishponds have long been an industry of the Western Visayas Region. Indications are that the fishponds occupy the peat soils and acid sulfate soil areas along the coast. The Southeast Asia Fishery Development Center (SEAFDEC) situated in Iloilo Province have intensified the research and development aspect of brackish water fishery technology specially on prawn culture.

Table 5. Results of Experiments in 1983

A. Rice and mungbean yields in Sara Soil

CROPPING SYSTEM	YIELDS IN TONS/HA		
	RICE	RICE	MUNGBEAN
DSR-TPR-UC	6.39	2.86	0.12
DSR-WSR-UC	4.88	2.78	0.19
WSR-WSR-UC	4.38	3.31	0.09
Fertilizer application	36.5-14-14	90-0-0	20-40-40

B. NPK levels in rice (Guimbalaon)

TREATMENT	t/ha	TREATMENT	t/ha
0-0-0	1.70	60-0-0	4.07 ^c
30-0-0	2.64 ^c	60-30-0	4.35 ^b
30-30-0	3.62 ^d	60-60-60	4.48 ^b
30-60-0	3.81 ^{cd}	90-0-0	4.50 ^b
30-30-30	3.95 ^c	90-30-0	5.11 ^a
30-60-30	4.46 ^b	90-60-0	5.41 ^a

C. NPK levels in rice (Sara)

TREATMENT	t/ha	TREATMENT	t/ha
0-0-0	4.8 ^c	70-0-0	5.9 ^c
35-0-0	5.3 ^d	70-30-30	5.2 ^d
35-30-0	7.8 ^a	70-60-60	5.5 ^{cd}
35-30-30	6.8 ^b	105-30-0	5.9 ^c
		105-30-30	5.6 ^{cd}

Source: Apolinario Sotomil, MAF.

Table 6. Crop Production (La Granja)

1. Sugarcane

a. Experimental Results: ^{1/}

VARIETY	TC/HA	PS/TC	PS/HA	FERTILIZATION
Phil 6553 ^{1/}	82.49	1.69	140.68	0 - 105 - 0
	118.07	1.56	182.55	105 - 105 - 0
Phil 6607 ^{2/}	112.37	1.41	156.81	0 - 0 - 0
	142.70	1.15	165.52	105 - 105 - 0
Phil 56226 ^{3/}	103.49	1.73	178.79	100 - 100 - 150
	101.38	1.93	201.89	200 - 100 - 150
	101.29	1.69	171.41	300 - 100 - 150

^{1/}Data obtained from the results of the following experiments:
Conducted by the Dept. of Soils/Plant Nutrition. PHILSUCOM, La Granja.

2. Other Crops (Experimental results)^{1/}

<u>CROPS</u>	<u>FERTILIZER RECOMMENDATION</u>	<u>PEST/DISEASE CONTROL (CHEMICALS APPLIED)</u>	<u>MEAN YIELD/HECTARE (T/HA)</u>	
			<u>DRY SEASON</u>	<u>WET SEASON</u>
1. Field legumes	30-30-30 kg NPK/ha	Azodrin, Lannate & Benlate		
a. Mungbean			1.26	1.77
b. Soybean			2.30	2.53
c. Peanut			2.78	2.58
2. Vegetable legumes	50-50-50 kg NPK/ha	Azodrin, Lannate & Benlate		
a. Cowpea			6.66	6.31
b. Pole sitao			8.90	13.51
c. Pole lima			7.19	
d. Winged bean				11.35
e. Bush sitao			8.34	8.21
f. Pigeon pea				1.16
3. Cereals				
a. Upland rice	60-30-30 kg NPK/ha	Machete (preemergence herb.) Sevin 50#, Azodrin, Lannate and Furadan liquid		2.68
b. Corn	120-60-60 kg NPK/ha	Azodrin, Furadan 3G & Lannate	5.75 (y) 6.36 (3)	7.70 (y) 6.42 (w)
c. Sorghum	120-60-60 kg NPK/ha	Azodrin, Furadan 3G & Lannate	4.82	
4. Root Crops				
a. Cassava	60-40-90 kg NPK/ha	Furadan 3G, Basudin, Carbofen & Gamo Hystox	6.0	24.0 5.80
5. Vegetables				
a. Tomato	60-129-96 kg NPK/ha	Azodrin, Sevin 50# & Lannate	12.80	6.03
b. Green onion	150-50-50 kg NPK/ha	Azodrin, Sevin 50# & Lannate	13.28	4.21
c. Pechay	240-60-60 kg NPK/ha	Decis and Azodrin	13.70	24.02

^{1/}

Information furnished by BPI? Ministry of Agriculture and Food, La Granja, La Carlota City.

INFORMATION ON SPECIFIC TOUR ROUTE AND STOPS
(Region VI)

For everybody's information, the local participants in particular, the soil series or soil types mapping units in the provincial reconnaissance maps are more of soil associations. The crops reflect firstly, the state of the art; secondly, the transportation constraints because of rough logging roads or by boats or canoes along the coast; and thirdly, the time and logistics support allocated when the surveys were conducted. A great deal of extrapolations have to be made by the soil surveyors.

The utility of these soil survey report depends a great deal on the users and interpreters. Despite very negative criticism as to the quality of work in general from many sectors, these surveys have been useful in national, regional, and provincial planning exercises. A good number of soil scientist have considered these as very helpful and information materials in understanding the nature of the potentials and the problems associated with the soil resources of the country.

The experience derived from this field tour will optimistically inspire the participants and develop their interests in understanding and interpreting the reports, whether they be the dated reconnaissance soils surveys or the newly adopted land use evaluation surveys.

The Western Visayas Region:

Iloilo. From the venue of the technical sessions in Iloilo City, the field tour goes on a long drive toward the north-northeastern section of the province to Ajuy town at the southern edge of the area of the Sara series. The tour traverses a long stretch of wetland rice field on the relatively broad coastal plains that gently slope into the undulating uplands. The areas may have been planted by wet direct seeding or are being transplanted to rice. Wet direct seeding of rice is a very common practice in these wetland rice areas, which shortens the turn

around time between cropping and enables either a rice-rice-fallow cropping system or a rice-rice-upland crop system. Upland crops are generally green corn and legumes (mungbean and cowpea). More enterprising farmers plant green leafy vegetables during the cooler months, December to February, and get better returns.

The groves and patches of coconuts, bananas, and perennial fruit trees, interspersed within the extensive riceland areas, are grown either on the non-puddled Sta. Rita soil (a Vertisol) or on better drained soils on slightly higher topographic position on the level landscape and along stream banks.

Sugarcane increases in areas on the slightly undulating to sloping higher topography near Barotac Nuevo. The alluvial and colluvial footslopes and the lower hillslopes are also utilized for sugarcane while rice are still grown on intercrest upland waterways. The hills are either of coralline limestone associated with the Faraon (Lithic Rendoll) or a calcareous sedimentaries associated with the Alimodian series, or basaltic and andesitic flows and marine pyroclastics, the landform associated with the Barotac soils.

The three pedons for study are the Sara series, the Barotac series and the Alimodian series. The Sara series (Pedon 1) is on level to slightly undulating alluvial plains and coastal alluvium. The materials are mainly deposited from the dioritic hills, the landform associated with the San Rafael series. The hills and low mountains at the northeast of the plain are unidentified soils but which have the characteristics of the Oxic Plintaquults. Soils along the coastal areas (SND) vary in range of salinity (marine influenced) and pockets of soils with jarosite have been identified.

The Sara soils are mainly on wetland rice during the wet season on account of high water table. Rice during the dry season are only grown where supplementary irrigation is available.

From the Sara series area to Pedon 2 (Barotac), fringing coastal plains and rolling foothills are on rice and coconut systems. Rice are on interhill bottom lands and small valleys and on terraced slopes with available irrigation supplement from small contact springs.

Upland crops during the dry season are corn, cowpea, or mungbean.

The Barotac series (Pedon 2) as mapped includes a number of other soils. The pedon represents that of the hilly to mountains areas on deeply weathered slopes and crests. Presumably deforested from its virgin state, these areas are mostly on grass and shrubs ("parang" or savannah vegetation). They are either used as pastures and for shifting cultivation (kaingin). This soil area requires a well planned soil conservation oriented agro-forestry management system in order to be made productive.

Few local participants may have been exposed to this kind of soils but this edaphic situation is the frontier of agricultural production in the very near future. Management of similar situations has to be studied now to make this and similar areas elsewhere in the country more productive soonest.

Pedon 3 (Alimodian series). The alimodian series is the most extensive upland soil mapped in the island of Panay and are identified a well in many parts of the country. The central concept of this series associates it with rolling to hilly areas of tilted calcareous marine sedimentaries. A wide variety of soils are included in the mapping unit. The pedon seems to be more closely related to the Sta Rita series which occupies the more level waterways and the narrow valleys of the undulating and rolling uplands and the broad level plains.

Negros Occidental:

Five pedons, representative of 5 soil areas, are to be visited. From Bacolod City, the place of landing, after the boat ride from Iloilo,

the tour goes south through Bago City and then east to La Carlota and La Granja (Pedon 4).

The pedon (Guimbalaon series) represents an extensive soil area on sloping and steeply undulating foothills and dissected piedmont terraces which are of volcanic ejecta of rocks and ash from a number of volcanic cones. Mt. Kanlaon is presently active and hence more nationally known than the other volcanic peaks. The soil areas are mainly in sugarcane, but other upland crops such as upland rice, corn and legumes are gaining more importance as alternative crops during periods of unfavorable sugar price in the world market.

The tour backtracks to Busay, Bago City. The Bago series (Pedon 5) is on a broad, level to undulating, terrace slightly above the coastal plains but at a much lower physiographic position than the Guimbalaon. Primarily used for sugarcane, a considerable position has been converted into wetland rice field. The more level topography and the soil characteristics favor the soil area for irrigated wetland rice. This soil series are also extensively mapped in the Province of Isabela on older alluvial terraces and under similar climate (Type III, short dry season), but is mainly used for wetland rice. This soil series is found responsive to P and K application.

Pedon 6 (Tupi series) is accessible by climbing eastward from Bacolod City to the interfluvial shoulders of Kanlaon Volcano. Despite the good drainage conditions which favors sugarcane and other upland crops production, puddling for wetland rice on terraced slopes are increasingly being practiced where reliable sources of irrigation water are available. Puddling considerably reduces the infiltration rate. Once drained below the point of saturation, the soil structure readily regenerates and the infiltration rates are accelerated. Hence, the wetland rice paddies will need tremendous volume of water to re-saturate the soil.

This soil series has been identified and mapped also as extensive coconut areas near Dumaguete City in Negros Oriental and utilized for plantation crops like export bananas, coconuts and coffee in South Cotabato in Mindanao. All of these areas are associated with active and dormant volcanic cones.

The tour goes back to Bacolod City and turns North to Pedon 7 (Silay series) in Silay City. This series is most extensive in Negros Occidental and is also identified and mapped in much smaller areas in Zamboanga del Sur and Sorsogon. It is typically associated with coastal alluvium where materials are from volcanic ash uplands. Some of silay series areas have been used for wetland rice even before the drop in the price of sugar. Considerable areas on sugarcane on this soils have been and are being converted to wetland rice at present.

From Bacolod, the tour takes a long drive across the island via the Northern coast which have small and isolated coastal lowlands. An abrupt change in parent materials of the soils take place near the town of Escalante. From mainly volcanic materials there is an abrupt change to areas of coralline limestone on the hilly and mountainous route. This landform dominates the eastern section of the province down to the edge of Dumaguete City. At some points near the town of Calatrava, the barren hills at times being cropped to corn by dibbling, are quarried for phosphatized limestone rocks and ground as phosphatic fertilizers.

Pedon 8 (Isabela series) is on a relatively wide isolated coastal lowland, level along the coast and undulating to hilly, further from the coastline. There are two points of interest in this area. Progressive and more scientific prawn and fishpond culture is being developed, and the scientific management of plantations, which are being diversified to crops other than sugarcane. Emphasis on the management for proper land use and soil conservation is quite impressive.

The Isabela series is most extensive also in the island of Negros and is mapped in lesser extents in the provinces of Cagayan and Kalinga-Apayao in Luzon and in Zamboanga in Mindanao. Sugarcane plantations where this soil is dominant are noted for the high cane tonnage per hectare which is coupled by high sugar purity which result to high sugar yields per hectare.

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Soil Name:

Soil Survey # S85-FN-725-034

Location: Casamata, Ajuy, Iloilo

Latitude: 11-11-50-N

Classification:

Physiography: in coastal plains

Microrelief:

Slope Characteristics: 10%

Precipitation: 1880 mm Aquic moisture regime

Water Table Depth: 80 cm

Drainage: Moderately well drained

Stoniness:

Parent Material: alluvium from mixed material

Diagnostic Horizons: 0 to 15 cm Ochric, 15 to 131 cm Cambic

Described by: A. Dayot, Dr. R. Yeck and T. Palmejar

NEEL ID #: 85P0588

Longitude: 123-01-45-E

Elevation: 8 m MSL

Permeability:

Date: 01/85

5 months wet, 5 months dry.

Apg--0 to 15 cm; grayish brown (10YR 5/2) silty clay loam; common medium distinct gray (10YR 5/1) mottles; massive parting to weak fine and medium subangular blocky; friable, nonsticky, slightly plastic; abrupt smooth boundary. Dark reddish brown (2.5YR 3/4) mottles along ped faces and channel pores; common grass and rice roots; common random and oblique open pores.
85P3022

Bw1--15 to 52 cm; strong brown (7.5YR 5/6) silty clay loam; weak fine and medium subangular blocky structure; friable, nonsticky, slightly plastic; few very fine roots; few very fine and fine tubular pores; clear wavy boundary. Split for sampling at 34 cm.
85P3023

Bw2--52 to 66 cm; yellowish brown (10YR 5/4) coarse sandy loam; few fine distinct gray (10YR 5/1) mottles; nonsticky, nonplastic; few medium tubular pores; clear wavy boundary.
85P3025

Bg1--66 to 102 cm; brown to dark brown (7.5YR 4/4) silty clay loam; common fine and medium distinct gray (10YR 5/1) mottles; weak fine and medium subangular blocky structure; nonsticky, slightly plastic; common very fine and fine tubular pores; gradual wavy boundary. Pores are vertical and oblique.
85P3026

Bg2--102 to 131 cm; brown to dark brown (7.5YR 4/4) silty clay loam; weak fine and medium subangular blocky structure; nonsticky, slightly plastic; common fine and medium tubular pores; gradual wavy boundary. Pores are oblique.
85P3027

Cq--131 to 141 cm; brown (7.5YR 5/4) coarse sand; nonsticky, nonplastic.
85P3028

DEP cm	HORI- ZON	DRY COLOR		MOIST COLOR		TEXTURE	STRUCTURE	NL # 85F-	CONSISTENCE			ROOTS		PH	BD RY
		1	2	1	2				D	M	OTH	WET	1		
0-15	Apg			10YR	5/2	SICL									
15-52	Bw1			7.5YR	5/6	SICL	0 MA ->1FMSBK	3022	FR	SO	SP				AS
52-66	Bw2			10YR	5/4	COSL	1FMSBK	3023	FR	SO	SP	P VI			CW
66-102	Bg1			7.5YR	4/4	SICL	1FMSBK	3025		SO	PO				CW
102-131	Bg2			7.5YR	4/4	SICL	1FMSBK	3026		SO	SP				GW
131-141	Cg			7.5YR	5/4	COS		3027		SO	SP				GW
								3028		SO	PO				

DEP	PORES		CONCRETIONS		EPP ERV	MOTTLES	COATS ON PED SURFACES	VOL% LTTL	CLAY PCT	SOIL MST
	1	2	1	2						
015										
052	TUF	11				C 2 D 10YR 5/1				
066	TUF	2								
102	TUC	11				P 1 D 10YR 5/1				
131	TUC	12				C 12D 10YR 5/1				

HORIZON # 1 Dark reddish brown (2.5YR 3/4) mottles along ped faces and channel pores; common grass and rice roots; common random and oblique open pores.

HORIZON # 2 Split for sampling at 34 cm.

HORIZON # 4 Pores are vertical and oblique.

HORIZON # 5 Pores are oblique.

DATE PRINTED 12/20/85

SARA

S 85FN-725 -034

PIDON NO. 85P 588 NATIONAL SOIL SURVEY LABORATORY

	-1--	-2--	-3--	-4--	-5--	-6--	-7--	-8--	-9--	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-	-20-	
SAMPLE NO.	(- NH4OAC EXTRACTABLE BASES -)					ACID-	EXTR (-	-	-	-	AT	-BASE	SAT-	CO3 AS	RES.	COND. (- - - PH - - -)					
	HZN NO.	5B5A 6N2I	5B5A 6O2D	5B5A 6P2B	5B5A 6Q2B	SUM	AL	SUM	NH4-	OAC	+ AL	SAT	SUM	OAC	2MM	7CM	MMHOS	KCI	CACI2	IN	H2O
						MIQ /	100 G	6H5A	6G9A	5A3A	5ABB	5A3B	5G1	5C1	5C1	6E1G	8I1				
853022	1	4.8	1.2	0.3	--	6.3	6.9			13.2	8.1			48	78						
853023	2	8.8	1.9	0.4	--	11.1	5.2			16.3	11.3			68	98			4.2	4.7	5.6	
853024	3	7.9	1.6	0.4	--	9.9	4.6			14.5	10.2			68	97			4.7	5.9	6.4	
853025	4	6.7	1.3	0.3	--	8.3	4.3			12.6	8.4			66	99			4.7	5.9	6.5	
853026	5	9.7	2.2	0.4	--	12.3	5.5			17.8	12.4			59	99			4.7	6.0	6.6	
853027	6	9.4	2.3	0.4	--	12.1	5.0			17.1	12.5			71	97			4.7	6.1	6.7	
853028	7	6.5	1.5	0.5	--	8.5	3.3			11.8	8.4			72	100			4.8	5.9	6.6	

SAMPLE NO.	HZN NO.	(- - - - - MINERALOGY - - - - -)															
		(- - - - - CLAY - - - - -)(- - - - -)															
		(- - - - - X-RAY - - - - -)(- - - - -) TOTAL DOM															
		(- - - - - <2U - - - - -)(- - - - -) RES WEATH															
		7A2I 7A2I 7A2I 7A2I 7A3 7A3 7B1A 7B1A															
		<- RELATIVE AMOUNTS -> <- - - - - PCT - - - - ->															
853022	1																
853023	2																
853024	3																
853025	4																
853026	5																
853027	6																
853028	7																

AVERAGES, DEPTH 25-100: PCT CLAY 16 PCT .1-75MM 37

ANALYSES: S= ALL ON SIEVED <2MM BASIS

MINERALOGY: KIND OF MINERAL KK KAOLINITE VM VERM-MICA FP PLAG-FELD
 RELATIVE AMOUNT 6 INDETERMINATE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

66

N S S L
S U P P L E M E N T A L D A T A S H E E T

SARA

S85FN-725-034

SAMPLE NO.	HZN NO.	P RETENT 654 PCT	(ACID-OXALATE EXTRACT)				pH		(WATER CONTENT)	
			OPT DEN 8J	AL 6G12A	FE 6C9A	SI 6V2	KCl 8C1G	MOIST H ₂ O 1:1	MOIST CaCl ₂ .01M 1:2	15-BAR MOIST 4B2B
			<-----PCT----->						<-----PCT----->	
85 3022	1									
85 3023	2					4.2	5.5	4.7	10.5	7.6
85 3024	3					4.7	6.5	5.6	13.7	10.6
85 3025	4					4.7	6.5	5.6	12.1	9.2
85 3026	5					4.7	6.6	5.6	9.9	7.4
85 3027	6					4.7	6.8	5.9	15.9	11.7
85 3028	7					4.7	6.7	5.8	16.5	12.1
						4.8	6.7	5.8	6.8	6.6

dr

CP85FN154

SAMPLE NO.	HZN NO.	MINERALOGY										X-RAY					DTA		TOT ANAL		
		FA		RE		SAND/SILT						CLAY									
		7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7A2I	7A2I	7A2I	7A2I	7A2I	7A3	7A3	K20	FE	
		PCT										RELATIVE AMOUNTS					PCT		603A	6C7A	
85P3022	1																				
85P3023	2																				
85P3024	3	VFS	26	FP29	QZ24	FK23	HN12	EP 6	BT 4	RA 2	PO<1	OP<1	KK 4	VM 2			KK29		0.4	7.5	
85P3025	4																	KK29		0.3	7.5
85P3026	5	VFS	27	FP30	FK23	QZ20	HN10	RA 6	EP 6	BT 5	OP 1	PO<1	KK 4	VM 2			KK21		0.3	6.6	
85P3027	6																	KK26		0.4	6.9
85P3028	7																				

ANALYSES: S-ALL ON SIEVED < 2mm BASIS

MINERALOGY: FA = FRACTION ANALYZED RE = RESISTANT

KIND OF MINERAL: VM = VERMICULITE-MICA KK = KAOLINITE OP = OPAQUES PO = PLANT OPAL QZ = QUARTZ

RA = RESISTANT AGGREGATES BT = BIOTITE EP = EPIDOTE FK = POTASSIUM FELDSPAR FP = PLAGIOCLASE FELDSPAR

HN = HORNBLLENDE

RELATIVE AMOUNT: 6 INDETERMINATE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

MINERALOGY BASED ON SAND/SILT:

MINERALOGY BASED ON CLAY:

FAMILY PLACEMENT:

COMMENTS:

54

Series: Barotac
Soil Survey # S85-FN-725-035
Location: Sto. Tomas, Barotac Viejo.
Latitude: 11-03-25-N

NSSL ID #: B5P0589

Longitude: 122-53-15-E

Classification:
Physiography: in mountains or deeply dissected plateaus
Microrelief:

Slope Characteristics: 10%
Precipitation: 1880 mm Ustic moisture regime

Water Table Depth:
Drainage: Well drained

Permeability: Slow
Land Use: Rangeland not grazed
Erosion or Deposition: Severe

Stoniness: Class 3
Parent Material: unconsolidated sediments from igneous-basalt material over unconsolidated sediments from igneous-andesite material over unconsolidated sediments from shale material
Diagnostic Horizons: 0 to 20 cm Ochric, 36 to 111 cm Argillic

Date: 01/85

Described by: A. Dayot, Dr. R. Yeck and T. Palmejar
5 months wet, 5 months dry.

Ap--0 to 20 cm; clay; reddish brown (5YR 4/4) moist; few yellowish brown (10YR 5/6) mottles; moderate fine and medium subangular blocky structure; friable, sticky, plastic; common fine roots; few fine tubular pores; gradual wavy boundary. Few hard irregular pebbles and gravels (probably basalt and andesite).
85P3029

Bw--20 to 36 cm; clay; yellowish red (5YR 4/5) moist; few yellowish brown (10YR 5/6) mottles; weak fine and medium subangular blocky structure; friable, sticky, plastic; few fine roots; few fine tubular pores; few fine iron-manganese concretions; diffuse wavy boundary.
85P3030

Bt1--36 to 83 cm; clay; dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; friable, sticky, plastic; few fine and medium roots; few fine tubular pores. Split for sampling at 66 cm; thin patchy cutan on plane voids and tubular pores; many irregular hard weathering pebbles and gravel.
85P3031

Bt2--83 to 111 cm; clay; yellowish red (5YR 4/6) moist; moderate fine and medium subangular blocky structure; friable, sticky, plastic; few fine tubular pores; many fine soft masses of iron-manganese; diffuse wavy boundary. Few white precipitates probably CaCO₃; presence of thin tubulars and skeletal; irregular weathered pebbles and stones with broken faces showing black color probably manganese stains.
85P3033

Cr--111 to 152 cm; clay; red (2.5YR 4/6) moist; weak fine and medium subangular blocky structure; friable, sticky, plastic; few fine roots; few fine soft masses of iron-manganese. Many weathered irregular stones and gravels with black stain color on broken faces.
85P3034

57

DEP cm	HORI- ZON	DRY COLOR		MOIST COLOR		TEXTURE	STRUCTURE	NL # 85P-	CONSISTENCE			ROOTS		PH	BD RY						
		1	2	1	2				D	M	OTH	WET	1			2					
0-20	Ap			5YR	4/4	C	2FMSBK	3029	FR	S	P	C	1								
20-36	Bw			5YR	4/6	C	1FMSBK	3030	FR	S	P	F	1		GW						
36-83	Bt1			10YR	4/4	C	1FMSBK	3031	FR	S	P	F	12		DW						
83-111	Bt2			5YR	4/6	C	2FMSBK	3033	FR	S	P										
111-152	Cr			2.5YR	4/6	C	1FMSBK	3034	FR	S	P	F	1		DW						
LOW PORES		CONCRETIONS		EFF MOTTLES		COATS ON PED SURFACES					VOL%		CLAY		SOIL						
DEP	1	2	1	2	ERV	1	K	A	C	T	L	HUE	K	A	C	T	L	HUE	VOL% LTTL	CLAY PCT	SOIL MST
029	TUP	1			F	10YR	5/6														
036	TUP	1	M3P	1	F	10YR	5/6														
083	TUP	1																			
111	TUP	1	M2K	1																	
152			M2P	1																	

HORIZON # 1 Few hard irregular pebbles and gravels (probably basalt and andesite).
HORIZON # 3 Split for sampling at 66 cm; thin patchy cutan on plane voids and tubular pores; many irregular hard weathering pebbles and gravel.
HORIZON # 4 Few white precipitates probably CaCO₃; presence of thin tubulars and skeletans; irregular weathered pebbles and stones with broken faces showing black color probably manganese stains.
HORIZON # 5 Many weathered irregular stones and gravels with back stain color on broken faces.

EP

BAROTAC

DATE PRINTED 12/20/85

S 85FN-725 -035

PROJECT: PHILIPPINES-FORUM

GENERAL METHODS 1B1A, 2A1, 2B

SAMPLE NO. 85P3029-3034
 PEDON NO. 85P 589
 PROJECT NO. 85P 111

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 NATIONAL SOIL SURVEY LABORATORY
 LINCOLN, NEBRASKA 68508-3866

				-1--	-2--	-3--	-4--	-5--	-6--	-7--	-8--	-9--	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-	-20-	
SAMPLE NO.	HZN NO.	DEPTH (CM)	HORIZON	(- - -TOTAL - - -)		(- -CLAY- - -)		(- -SILT- - -)		(- - - - -)		(- -SAND- - -)		(- - - - -)		(- -COARSE FRACTIONS(MM)- - -)(>2MM)								
				CLAY	SILT	SAND	FINE	CO3	FINE	COARSE	VF	F	M	C	VC	WEIGHT - - - - - WT								
				LT	.002	.05	LT	.002	.02	.05	.10	.25	.50	1	2	5	20	.1	PCT OF WHOLE SOIL					
				PCT OF <2MM (3A1)											PCT OF <75MM(3B1)->									
853029	1S	0- 20	AP	43.8	31.2	25.0	13.8			19.4	11.8	6.9	6.9	3.9	3.4	3.9	2	--	--			20	2	
853030	2S	20- 36	BW	53.9	23.5	22.6	19.8			15.8	7.7	4.8	5.4	3.8	3.9	4.7	1	3	--	--			21	4
853031	3S	36- 66	BT1	53.1	21.6	25.3	18.6			16.3	5.3	3.0	3.8	3.1	3.6	11.8	4	1	--	--			26	5
853032	4S	66- 83	BT1	50.6	25.2	24.2	16.4			19.6	5.6	3.2	3.7	2.9	4.9	9.5	1	3					27	8
853033	5S	83-111	BT2	52.8	29.9	17.3	14.2			24.4	5.5	4.2	4.4	2.9	2.6	3.2	1	2					17	5
853034	6S	111-152	CR	48.6	32.0	19.4				25.9	6.1	4.0	4.4	2.9	3.0	5.1	1	1	--	--			17	2

SAMPLE NO.	HZN NO.	ORGN TOTAL		EXTR TOTAL	(- - DITH-CIT - -)				(RATIO/CLAY)		(ATTERBERG)		(- BULK DENSITY -)			(- - WATER CONTENT - -)					WRO		
		C	N		S	FE	AL	MN	CFC	BAR	15	LL	PL	FILLD	1/3	OVLN	WHOLE	FIELD	1/10	1/3		15	WHOLE
		6A1C	6B3A	6R3A	6C2B	6G7A	6D2A	8D1	8D1	4F1	4F	4A3A	4A1D	4A1H	4O1	4B4	4B1C	4B1C	4B2A	4C1			
		PCT OF <2MM		PCT OF <2MM		PCT OF <2MM		PCT OF <2MM		PCT OF <0.4MM		G/CC		CM/CM		PCT OF <2MM					CM/CM		
853029	1	1.60	0.122		8.4	0.8	0.2	0.28	0.50														
853030	2	0.62	0.056		9.9	1.0	0.2	0.17	0.45						1.31	1.50	0.046				34.4	22.0	0.16
853031	3	0.32			9.7	1.1	0.2	0.17	0.48						1.79	1.82	0.005				18.2	24.5	
853032	4	0.26			9.3	1.1	0.3	0.19	0.48	70	26											25.4	
853033	5	0.22			9.2	0.9	0.3	0.21	0.52	68	27				1.90	1.96	0.010				16.9	24.4	
853034	6	0.20			9.2	0.8	0.3	0.22	0.83						1.33	1.44	0.026				33.6	27.3	0.08

*** CONTINUATION ON NEXT PAGE ***

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CP85FN154

SAMPLE NO.	HZN NO.	MINERALOGY										X-RAY		DIA		TOT ANAL	
		FA		RE		SAND/SILT		CLAY		PCT		7A2I	7A3	6Q3A	6C7A		
85P3029	1																
85P3030	2																
85P3031	3																
85P3032	4																
85P3033	5																
85P3034	6																

ANALYSES: S=ALL ON SIEVED < 2mm BASIS

MINERALOGY: FA = FRACTION ANALYZED RE = RESISTANT

KIND OF MINERAL: GE = GOETHITE VR = VERMICULITE KK = KAOLINITE

RELATIVE AMOUNT: 6 INDETERMINATE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

MINERALOGY BASED ON SAND/SILT:

MINERALOGY BASED ON CLAY:

FAMILY PLACEMENT:

COMMENTS:

Series: Alluvial
Soil Survey # SB-EN 725-036
Location: Sto. Tomas, Barotac Viejo
Latitude: 10-54-50-N

NSSL ID #: 85P0540

Longitude: 122-28-40-E

Classification:
Physiography: Upland slope in level or undulating uplands
Microrelief:

Slope Characteristics: 60
Precipitation: 1980 mm Ustic moisture regime
Water Table Depth:

Permeability: Slow
Land Use: Cropland

Drainage: Well drained
Stoniness:

Parent Material: unconsolidated sediments from sandstone-shale material
Diagnostic Horizons: 0 to 10 cm Ochric, 34 to 104 cm Argillic

Described by: A. Dayot, Dr. R. Yeck and T. Palmejar

Date: 01/85

5 months wet, 5 months dry.

Ap--0 to 10 cm; clay; brown to dark brown (10YR 4/3) moist; few fine faint yellowish brown (10YR 5/6) mottles; moderate fine and medium subangular blocky structure; firm, sticky, plastic; few fine and few medium roots; few fine tubular pores; clear boundary.
Some earthworm holes.
85P3035

BA--10 to 34 cm; clay; dark yellowish brown (10YR 4/6) moist; few fine and medium distinct yellowish brown (10YR 5/6) mottles; moderate to strong fine and medium subangular blocky structure; firm, sticky, plastic; clear wavy boundary.
Some ped faces and tubular pores are coated with clay and OM as patchy thin cutan along peds faces, earthworm (holes) and rootholes, initial development of slickensides.
85P3036

Bt1--34 to 69 cm; clay; dark yellowish brown (10YR 4/4) moist; moderate to strong fine and medium subangular blocky structure; friable, sticky, plastic; few fine roots; common patchy clay films on faces of peds and in pores; clear wavy boundary.
Split for sampling at 55 cm; tubulars and stress cutans, presence of more developed slickenside than above horizon.
85P3037

Bt2--69 to 104 cm; clay; dark yellowish brown (10YR 4/4) moist; weak to moderate fine and medium subangular blocky structure; friable, sticky, plastic; few fine tubular pores; common patchy prominent clay films on faces of peds; diffuse wavy boundary.
Open channel and huge pores; presence of gray color on ped and pores faces.
85P3039

C1--104 to 151 cm; clay; yellowish brown (10YR 5/6) moist; strong medium and coarse subangular blocky structure; friable, sticky, plastic; discontinuous faint clay films on faces of peds; patchy prominent clay films on faces of peds; gradual wavy boundary.
Presence of well developed structure 5-10 cm long; presence of some earthworm holes filled with clay and OM, few roots
presence of greenish gray (5B6 5/1) on ped and pore faces.
85P3040

CR--151 to 172 cm; clay.
Same as above horizon but no root penetration but with presence of white precipitates along peds and crack faces probably CaCO₃.
85P3041

ALIMODIAN

DATE PRINTED 12/20/85

S 85FN-725 -036

PROJECT: PHILIPPINES-FORUM

GENERAL METHODS 1B1A, 2A1, 2B

SAMPLE NO. 85P3035-3041
 PEDON NO. 85P 590
 PROJECT NO. 85P 111

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 NATIONAL SOIL SURVEY LABORATORY
 LINCOLN, NEBRASKA 68508-3866

				-1--	-2--	-3--	-4--	-5--	-6--	-7--	-8--	-9--	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-	-20-	
SAMPLE NO.	HZN NO.	DEPTH (CM)	HORIZON	(- - -TOTAL - - -)		(- -CLAY- -)		(- -SILT- -)		(- - - - -SAND- - - -)		(- -COARSE FRACTIONS(MM)- -)		(>2MM)										
				CLAY LT .002 -<-	SILT .002 -<-	SAND LT .002 -<-	FINE LT .002 -<-	CO3 LT .002 -<-	COARSE VF .05 -<-	F .10 -<-	M .25 -<-	C .5 -<-	VC 1 -<-	1 2 -<-	5 5 -<-	20 20 -<-	75 75 -<-	1 1 -<-	PCT OF PCT OF -<-					
853035	1S	0-10	AP	64.5	34.5	1.0	35.2	24.1	10.4	0.5	0.3	0.2	--	--	--	--	--	--	--	--	--	--	--	TR
853036	2S	10-34	BA	64.5	33.6	1.9	28.8	24.7	8.9	1.6	0.2	0.1	--	--	--	--	--	--	--	--	--	--	--	TR
853037	3S	34-55	BT1	60.7	36.7	2.6	24.7	28.0	8.7	2.2	0.3	0.1	--	--	--	--	--	--	--	--	--	--	--	TR
853038	4S	55-69	BT1	52.5	42.8	4.7	17.5	31.4	11.4	4.0	0.5	0.2	--	--	--	--	--	--	--	--	--	--	--	TR
853039	5S	69-104	BTG1	52.3	44.2	3.5	18.4	32.1	12.1	3.0	0.3	0.2	--	--	--	--	--	--	--	--	--	--	--	TR
853040	6S	104-151	BTG2	59.2	39.1	1.7	22.4	31.1	8.0	1.4	0.2	0.1	--	--	--	--	--	--	--	--	--	--	--	TR
853041	7S	151-192	CR	57.4	39.1	3.5		29.7	9.4	3.2	0.3	--	--	--	--	--	--	--	--	--	--	--	--	TR

SAMPLE NO.	HZN NO.	ORGN TOTAL		EXTR TOTAL		(- - DITH-CIT - -)				(RATIO/CLAY)		(ATTERBERG)		(- BULK DENSITY -)				(- WATER CONTENT -)				WRD WHOLE SOIL	
		6A1C	6B3A	6R3A	6C2B	6C7A	6D2A	8D1	8D1	LL	PI	FIELD	1/3	OVEN	WHOLE	FIELD	1/10	1/3	15	WHOLE			
853035	1	1.66	0.170																				
853036	2	0.81	0.090			2.7	0.4	0.1	0.85	0.46													
853037	3	0.53	0.063			2.7	0.4	0.1	0.87	0.49												29.9	
853038	4	0.38				2.7	0.4	0.1	0.91	0.53	100	70			0.94	1.85	0.253					31.7	
853039	5	0.33				2.4	0.3	0.1	1.03	0.60					0.99	1.75	0.209					59.2	
853040	6	0.36				2.5	0.2	TR	0.91	0.55					0.97	1.73	0.213					56.1	
853041	7	0.50				2.3	0.2	TR	0.87	0.54					0.89	1.69	0.238					57.1	
																							32.4
																							30.8
																							0.25
																							0.24
																							0.25

*** CONTINUATION ON NEXT PAGE ***

14

CP85FN154

SAMPLE NO.	HZN NO.	MINERALOGY										X-RAY					DTA		TOT ANAL	
		FA	RE	SAND/SILT							CLAY					K2O	FE	603A	6C7A	
		7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7A2I	7A2I	7A2I	7A2I	7A2I	7A3	7A3		
		PCT										RELATIVE AMOUNTS					PCT			
85P3035	1											MT 4	KK 2	GE 2	MI 1					
85P3036	2										MT 4	KK 2	GE 1	VR 1	HE 1	KK1B			1.3	7.1
85P3037	3										MT 4	KK 2	GE 2	MI 1		KK1B			1.2	7.2
85P3038	4	CU5I	5I	QZ3I	FK27	RA20	AM11	PT 6	MS 4	EP 1	FP 1	OP 1								
85P3039	5										MT 4	KK 2	GE 1	MI 1	HE 1	KK1B			1.2	7.2
85P3040	6										MT 4	KK 2	GE 1	MI 1	HE 1	KK1B			1.3	6.9
85P3041	7																			

ANALYSES: S-ALL ON SIEVED < 2mm BASIS

MINERALOGY: FA = FRACTION ANALYZED RE = RESISTANT

KIND OF MINERAL: GE = GOETHITE MI = MICA MT = MONTMORILLONITE KK = KAOLINITE HE = HEMATITE VR = VERMICULITE

OP = OPAQUES QZ = QUARTZ RA = RESISTANT AGGREGATES AM = AMPHIBOLE PT = BIOTITE EP = EPIDOTE

FK = POTASSIUM FELDSPAR FP = PLAGIOCLASE FELDSPAR MS = MUSCOVITE

RELATIVE AMOUNT: 6 INDETERMINATE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

MINERALOGY BASED ON SAND/SILT:

MINERALOGY BASED ON CLAY:

FAMILY PLACEMENT:

COMMENTS:

Series: Guimbalan
Soil Survey # SB5-FN-725-039
Location: La Granja, Bacolod, Negros Occ.
Latitude: 10-24-30-N
Classification:
Physiography:
Microrelief:

Slope Characteristics: 2%
Precipitation: 3000 mm Udic moisture regime
Water Table Depth:
Drainage: Well drained
Stoniness:

Parent Material: volcanic ash from pyroclastic material
Diagnostic Horizons: 0 to 36 cm Mollic, 36 to 54 cm Cambic
Described by: A. Dayot, Dr. R. Yeck, Dr. del Rosario, P. Ila

MSSL ID #: 85P0543

Longitude: 123-03-40-E

Elevation: 80 m MSL

Permeability: Rapid
Land Use: Cropland

Date: 01/85

Stratified sand layer observed at 75-78 cm depth. A thin layer of very friable yellowish brown soil at 119-121 cm depth was observed locked between C3 and C5 horizon. This horizon was sampled for relevant soil analysis.

Ap--0 to 18 cm; dark yellowish brown (10YR 3/4) fine sandy loam; weak fine granular structure; very friable, nonsticky, nonplastic; neutral; gradual wavy boundary.
Many fine grasses and sugarcane roots; few fine rounded and sub-rounded pebbles.
85P3054

AB--18 to 36 cm; dark yellowish brown (10YR 3/4) very fine sandy loam; weak to moderate fine subangular blocky structure; friable, nonsticky, nonplastic; neutral; wavy boundary.
Many fine grass and sugarcane roots; many fine open oblique and random pores.
85P3055

Bw--36 to 54 cm; reddish brown (5YR 4/4) gravelly sandy loam; loose, nonsticky, nonplastic; few very fine and fine roots; many fine tubular pores; neutral; clear irregular boundary.
Clods break readily when disturbed.
85P3056

C1--54 to 75 cm; brown to dark brown (10YR 4/3) gravelly sandy loam; nonsticky, nonplastic; neutral; gradual smooth boundary.
Slightly compact in place but readily breaks when disturbed; horizon appears sorted and stratified thin layers at closer observation, upper part of horizon shows brown color influenced from upper horizon.
85P3057

C2--75 to 107 cm; dark yellowish brown (10YR 3/4) gravelly sandy loam; ; neutral; gradual smooth boundary.
Slightly compact but breaks very readily when disturbed; some fine root penetration; coarse compact sand layer at 75-78 cm; common .5-1 cm irregular and sub-rounded volcanic coarse fragments and few irregular and sub-subrounded andesite of basaltic hard stones and pebbles.
85P3058

C3--107 to 119 cm; dark yellowish brown (10YR 3/4) gravelly sandy loam; nonsticky, nonplastic; neutral; smooth boundary.
Compact and cemented but porous; shows some layering characteristics, break to loose and clod fragments when sampled and disturbed, no root penetration, common irregular hard pebbles and gravels.
85P3059

C4--119 to 143 cm; very dark grayish brown (10YR 3/2) gravelly sandy loam; ; neutral; smooth boundary.
More compact than upper horizon but breaks to loose material when disturbed; horizon show stratified layering characteristics; dominant pebbles are .5-1 cm diameter with mixture of some 5-10 cm irregular and sub-rounded hard probably andesitic and basaltic stones.
85P3060

C5--143 to 158 cm; dark brown (10YR 3/3) coarse sandy loam.
Very compact; porous, showing stratified layering of very dark grayish brown (10YR 3/2) or sand grain color.
85P3061

AS

DEP cm	HORI- ZON	DRY COLOR 1	DRY COLOR 2	MOIST COLOR		TEXTURE	STRUCTURE	NL # 85P-	CONSISTENCE				ROOTS		PH	BD NY
				1	2				D	M	OTH	WET	1	2		
0-18	Ap			10YR	3/4	FSL	1F GH	3054	VPR	SO	PO					
18-36	AB			10YR	3/4	VFSL	5F SBK	3055	FR	SO	PO			6.7	GW	
36-54	Bw			5YR	4/4	GRSL		3056	L	SO	PO	F 11		6.7	W	
54-75	C1			10YR	4/3	GRSL		3057		SO	PO			6.7	CI	
75-107	C2			10YR	3/4	GRSL		3058						7	GS	
107-119	C3			10YR	3/4	GRSL		3059						7	GS	
119-143	C4			10YR	3/2	GRSL		3060		SO	PO			7	S	
143-158	C5			10YR	3/3	COSL		3061						7	S	

LOW PORES		CONCRETIONS		EFF MOTTLES		COATS ON PED SURFACES				VOLA	CLAY	SOIL								
DEP	1	2	1	2	ERV	1	2	K	AC	T	L	HUE	K	AC	T	L	HUE	LTTL	PCT	MST
054	TUM	1																		

HORIZON # 1 Many fine grasses and sugarcane roots; few fine rounded and sub-rounded pebbles.
HORIZON # 2 Many fine grass and sugarcane roots; many fine open oblique and random pores.
HORIZON # 3 Cloda break readily when disturbed.
HORIZON # 4 Slightly compact in place but readily breaks when disturbed; horizon appears sorted and atratified thin layers at closer observation, upper part of horizon shows brown color influenced from upper horizon.
HORIZON # 5 Slightly compact but breaks very readily when disturbed; some fine root penetration; coarse compact sand layer at 75-78 cm; common .5-1 cm irregular and sub-rounded volcanic coarse fraqments and few irregular and sub-subrounded andesite of basaltic hard stones and pebbles.
HORIZON # 6 Compact and cemented but porous; shows some layering characteristics, break to loose and clod fraqments when sampled and disturbed, no root penetration, common irregular hard pebbles and gravels.
HORIZON # 7 More compact than upper horizon but breaks to loose material when disturbed; horizon show stratified layering characteristics; dominant pebbles are .5-1 cm diameter with mixture of some 5-10 cm irregular and sub-rounded hard probably andesitic and basaltic stones.
HORIZON # 8 Very compact; porous, showing stratified layering of very dark grayish brown (10YR 3/2) or sand grain color.

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GUIMBALAON

DATE PRINTED 12/20/85

S 85FN-725 -039

PROJECT: PHILIPPINES-FORUM

GENERAL METHODS 1B1A, 2A1, 2B

SAMPLE NO. 85P3054-3063
 PEDON NO. 85P 593
 PROJECT NO. 85P 111

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 NATIONAL SOIL SURVLY LABORATORY
 LINCOLN, NEBRASKA 68508-3866

SAMPLE NO.	HZN NO.	DEPTH (CM)	HORIZON	TOTAL		CLAY		SILT		SAND		FINE		COARSE		VF		F		M		C		VC		(-COARSE FRACTIONS(MM)-)		(>2MM)	
				CLAY	SILT	SAND	FINE	CO3	FINE	COARSE	VF	F	M	C	VC	WEIGHT	WT	PCT OF	WHOLE										
853054	1S	0-18	AP	6.1	30.4	63.5	--	--	--	18.9	11.5	7.9	16.8	15.5	13.6	9.7	6	7	--	61	13								
853055	2S	18-36	AB	5.3	31.7	63.0	--	--	--	19.7	12.0	8.4	16.5	15.4	14.5	8.2	8	7	--	61	15								
853056	3S	36-54	BW	4.0	23.4	72.6	2.1	--	--	15.1	8.3	7.3	16.4	16.4	15.6	16.9	16	28	1	81	45								
853057	4S	54-75	C1	0.5	10.0	89.5	--	--	--	4.0	6.0	9.6	22.4	18.7	17.1	21.7	13	29	28	94	70								
853058	5S	75-107	C2	--	7.7	92.3	--	--	--	3.1	4.6	8.0	24.3	22.3	20.2	17.5	20	16	3	90	39								
853059	6S	107-119	C3	0.7	9.7	89.6	--	--	--	4.5	5.2	6.4	20.0	24.7	23.5	15.0	19	28	5	92	52								
853060	7S	119-143	C4	1.3	11.6	87.1	--	--	--	6.2	5.4	4.9	14.8	20.6	23.6	23.2	20	17	2	89	39								
853061	8S	143-158	C5	0.5	3.9	95.6	--	--	--	1.8	2.1	1.4	5.9	17.6	36.3	34.4	29	14	1	97	44								
853062	9S	56-96	4	1.4	15.2	83.4	--	--	--	9.3	5.9	5.8	16.2	16.7	16.5	28.2	15	19	16	89	50								
853063	10S	119-121	44	1.6	20.7	77.7	--	--	--	11.8	8.9	6.2	13.3	17.6	19.9	20.7	15	5	--	77	20								

SAMPLE NO.	HZN NO.	ORGN C	TOTAL N	EXTR P	TOTAL S	DITH-CIT				(RATIO/CLAY)		(ATLBERG)		BULK DENSITY				WATER CONTENT				WRD													
						FE	AL	MN	CEC	BAR	15	LIMITS	FIELD	1/3	OVEN	WHOLE	FIELD	1/10	1/3	15	WHOLE														
853054	1	2.54	0.239			1.9	0.8	0.1	2.77	2.43																									
853055	2	2.51	0.224			1.9	0.9	0.1	3.23	3.06																									
853056	3	1.47	0.134			1.8	0.8	0.1	3.83	4.30																									
853057	4	0.42	0.048			1.0	0.3	TR	12.00	15.40			49		4																				
853058	5	0.17				0.9	0.3	TR																											
853059	6	0.15				0.8	0.2	TR	6.86	6.86					NP																				
853060	7	0.16				0.9	0.3	TR	5.23	4.54																									
853061	8	0.10				0.7	0.2	TR	7.40	7.40																									
853062	9	0.65				1.3	0.5	TR	6.43	7.14																									
853063	10	0.92				1.3	0.5	TR	6.88	6.13																									

*** CONTINUATION ON NEXT PAGE ***

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N S S L
S U P P L E M E N T A L D A T A S H E E T

GUIMBALAON

S85FN-725-039

SAMPLE NO.	HZN NO.	P RETENT 654 PCT	(ACID-OXALATE EXTRACT)					(-----PH-----)		(WATER CONTENT)	
			OPT DEN 8J	AL 6G12A	FE 6C9A	SI 6V2	KCl 8C1G	MOIST H ₂ O 1:1	MOIST CaCl ₂ .01M 1:2	15-BAR MOIST 4B2B	15-BAR DRY 4B2A
			<-----PCT----->							<-----PCT----->	
85 3054	1	85	0.31	2.93	1.21	1.37	5.2				
85 3055	2	89	0.34	3.43	2.05	1.78	5.3			15.7	14.8
85 3056	3	90	0.24	2.88	0.90	1.42	5.5			20.4	16.2
85 3057	4	59	0.16	1.79	2.03	1.17	5.4			21.5	17.2
85 3058	5	42	0.11	1.02	1.36	0.63	5.3			9.3	7.7
85 3059	6	34	0.13	0.92	1.97	0.58	5.2			6.7	5.6
85 3060	7	40	0.15	0.96	1.91	0.61	5.2			5.5	4.8
85 3061	8	24	0.10	0.50	1.66	0.30	5.1			6.4	5.9
85 3062	9	71	0.18	2.17	2.15	1.34	5.5			4.1	3.7
85 3063	10	69	0.19	1.83	2.39	1.14	5.5			12.4	10.0
										16.5	9.8

Station: Bago
Soil Survey # SHS-FN-775-040
Location: Busay, Bago, Negros Occ.

MSL ID #: 85P0594

Latitude: 10-31-55-N
Classification:
Physiography: Broad plain
Microrelief:
Slope Characteristics: 18
Precipitation: 3230 mm Ustic moisture regime
Water Table Depth:
Drainage: Poorly drained
Stoniness:
Diagnostic Horizons: 0 to 17 cm Mollic, 31 to 121 cm Cambic
Described by: A. Dayot and Dr. R. Weck

Longitude: 122-54-40-E

Elevation: 25 m MSL
Permeability: Very slow
Land Use: Cropland

Date: 01/85

6 months wet, 5 months dry.

Ap--0 to 17 cm; clay; very dark gray (10YR 3/1) moist; weak medium and coarse angular blocky structure; firm, very sticky, very plastic; many fine roots; few fine tubular pores; few fine rounded iron-manganese concretions; neutral; diffuse smooth boundary.
85P3064

BA--17 to 31 cm; clay; very dark gray (10YR 3/1) moist; weak medium and coarse angular blocky structure; firm, very sticky, very plastic; few fine roots; few fine tubular pores; mildly alkaline.
Presence of common with more concentration of fine rounded hard and some soft manganese concretions; start of development of slickensides.
85P3065

Bg1--31 to 61 cm; clay; dark gray (10YR 4/1) moist; weak coarse angular blocky structure; very sticky, very plastic; few fine roots; moderately alkaline; diffuse wavy boundary.
Presence of few fine rounded hard and sub-rounded concretions; presence of greenish gray (5BG 5/1) gray colors on some peds and root pores faces; presence of coarse well developed slickensides and some cutan of OM and clay from upper horizon on some peds and root pores.
85P3066

Bg2--61 to 93 cm; clay; dark gray (10YR 4/1) moist; moderate medium and coarse angular blocky structure; firm, very sticky, very plastic; moderately alkaline; gradual wavy boundary.
Presence of some fine roots and oblique open pores; few fine (2-3 mm) diameter rounded and some sub-rounded manganese concretions; presence of well developed coarse slickensides and stress cutans.
85P3067

Bg3--93 to 121 cm; silty clay; gray (10YR 5/1) moist; weak medium and coarse angular blocky structure; friable, sticky, plastic; moderately alkaline; gradual wavy boundary.
Disappearance of manganese concretions.
85P3068

Crm--121 to 146 cm; sandy clay loam; grayish brown (10YR 5/2) and brownish yellow (10YR 6/6) moist; massive parting to weak medium and coarse subangular blocky; firm, slightly sticky, slightly plastic; moderately alkaline.
85P3069

DEP cm	HORI- ZON	DRY COLOR		MOIST COLOR		TEXTURE	STRUCTURE	NL # RSP-	CONSISTENCE			ROOTS		PH	BD RY
		1	2	1	2				D	M	OTH WET	1	2		
0-17	Ap			10YR	3/1	C	1MCABK	3064	FI	VS	VP	M	1	7	DS
17-31	BA			10YR	3/1	C	1MCABK	3065	FI	VS	VP	F	1	7.5	
31-61	Bg1			10YR	4/1	C	1COABK	3066		VS	VP	F	1	8	DW
61-93	Bg2			10YR	4/1	C	2MCABK	3067	FI	VS	VP			8	GW
93-121	Bg3			10YR	5/1	SIC	1MCABK	3068	FR	S	P			8	GW
121-146	Crm			10YR	5/2	10YR 6/6 SCL	0 MA ->1MCSBK	3069	FI	SS	SP			8	
LOW PORES DEP 1	2	CONCRETIONS		EFF	MOTTLES		COATS ON PED SURFACES				VOLA	CLAY	SOIL		
		1	2	ERV	1	2	K AC T L HUE			K AC T L HUE	LITL	PCT	MST		
017	TUF 1	MSP O 1													
031	TUF 1														

HORIZON # 2 Presence of common with more concentration of fine rounded hard and some soft manganese concretions; start of development of slickensides.

HORIZON # 3 Presence of few fine rounded hard and sub-rounded concretions; presence of greenish gray (5BG 5/1) gray colors on some peds and root pores faces; presence of coarse well developed slickensides and some cutan of OM and clay from upper horizon on some peds and root pores.

HORIZON # 4 Presence of some fine roots and oblique open pores; few fine (2-3 mm) diameter rounded and some sub-rounded manganese concretions; presence of well developed coarse slickensides and stress cutans.

HORIZON # 5 Disappearance of manganese concretions.

BAGO

DATE PRINTED 12/20/85

S 85FN-725 -040

PROJECT: PHILIPPINES-FORUM

GENERAL METHODS 1B1A, 2A1, 2B

SAMPLE NO. 85P3064-3069

PEDON NO. 85P 594

PROJECT NO. 85P 111

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NATIONAL SOIL SURVEY LABORATORY
LINCOLN, NEBRASKA 68508-3866

SAMPLE NO.	HZN NO.	DEPTH (CM)	HORIZON	(- - - TOTAL - - -) (- - CLAY - -) (- - SILT - -) (- - SAND - -) (- - COARSE FRACTIONS (MM) - -) (- - 2MM)																		
				CLAY LT	SILT .002	SAND .05	FINE LT	CO3 LT	LINE .002	COARSE .02	VF .05	F .10	M .25	C .5	VC 1	(- - - WEIGHT - - -) (- - - WT			WT PCT OF			
				PCT OF <2MM (3A1)											PCT OF <75MM (3B1)				SOIL			
853064	1S	0- 17	AP	21.5	24.8	53.7	15.0			12.2	12.6	11.8	19.4	7.7	6.3	8.5	3	--	--	44	3	
853065	2S	17- 31	BA	21.8	23.9	54.3	15.8			11.5	12.4	11.2	19.7	7.6	6.7	9.1	9	TR	--	--	48	9
853066	3S	31- 61	BG1	51.3	13.4	35.3	41.0			6.5	6.9	5.6	9.9	5.8	4.9	9.1	15	1	--	--	41	16
853067	4S	61- 93	BG2	52.4	19.7	27.9	31.7			11.8	7.9	5.9	9.7	5.3	2.9	4.1	TR	--	TR	22	TR	
853068	5S	93-121	BG3	48.0	25.9	26.1	23.0			15.9	10.0	7.1	10.5	5.4	1.9	1.2	8	--	--	25	8	
853069	6S	121-146	CR	22.5	18.4	59.1	15.0			9.6	8.8	8.8	11.8	12.3	17.5	8.7	3	1	2		53	6

SAMPLE NO.	HZN NO.	ORGN TOTAL C N		EXTR TOTAL P S		(- - DITHIONITE - -) (RATIO/CLAY)				(ATTERBERG)		(- BULK DENSITY -) COLL (- - WATER CONTENT - -) WTD				WTD WHOLE SOIL		
		6A1C	6B3A	6R3A	6C2B	6G7A	6D2A	CFC 8D1	BAR 8D1	LL 4F1	PI 4F	FIELD MOIST 4A3A	1/3 OVEN DRY 4A1D	WHOLE SOIL MOIST 4D1	1/10 BAR 4B4		1/3 BAR 4B1C	15 BAR 4B2A
		PCT OF <2MM		PCT OF <2MM		PCT OF <2MM		PCT OF <0.4MM		G/CC		PCT OF <2MM				CM/CM		
853064	1	0.84	0.092			3.3	0.3	0.8	0.76	0.59								
853065	2	0.79	0.085			5.2	0.2	0.4	0.75	0.60								12.6
853066	3	0.35	0.032			3.3	0.3	0.5	0.65	0.49		81	57					13.0
853067	4	0.22				1.9	0.2	TR	0.70	0.52								25.3
853068	5	0.17				1.3	0.2	0.1	0.77	0.56		71	43					27.2
853069	6	0.11				1.0	0.2	0.1	1.14	0.87				1.20	1.45	0.063		27.1
																36.1	19.6	0.19

*** CONTINUATION ON NEXT PAGE ***

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N S S L
S U P P L E M E N T A L D A T A S H E E T

BAGO

S85FN-725-040

SAMPLE NO.	HZN NO.	P RETENT 654 PCT	(ACID-OXALATE EXTRACT)				(-----pH-----)		(WATER CONTENT)		
			OPT DEN 8J	AL 6G12A	FE 6C9A	SI 6V2	KCl 8C1G	MOIST H ₂ O 1:1	MOIST CaCl ₂ .01M 1:2	15-BAR MOIST 4B2B	15-BAR DRY 4B2A
			<-----PCT----->						<-----PCT----->		
85 3064	1	28	0.08	0.16	0.83	0.10	5.6	6.4	6.0	14.9	12.6
85 3065	2	25	0.08	0.14	0.71	0.10	5.8	7.0	6.5	15.0	13.0
85 3066	3	28	0.06	0.20	0.37	0.09	5.8	7.2	7.1	29.5	25.3
85 3067	4	21	0.03	0.20	0.20	0.09	5.7	7.2	7.2	29.6	27.2
85 3068	5	21	0.02	0.17	0.14	0.07	5.6	7.4	7.0	31.3	27.1
85 3069	6	22	0.04	0.17	0.21	0.07	5.5	7.5	6.6	25.5	19.6

CP85FN154

SAMPLE NO.	HZN NO.	MINERALOGY											X-RAY					DTA		TOT ANAL	
		FA		RE		SAND/SILT							CLAY					K2O	FE		
		7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7A21	7A21	7A21	7A21	7A21	7A3	7A3	6Q3A	6C7A
		Pct											RELATIVE AMOUNTS					Pct			
85P3064	1												KK 3	MT 2	CR 2			KK10		0.1	5.2
85P3065	2												KK 3	MT 3	CR 2	FD 1		KK12		0.2	6.0
85P3066	3												KK 3	MT 3	CR 2	FD 1		KK41		0.1	5.6
85P3067	4												MT 3	KK 3	CR 2	FD 2		KK41		0.1	6.0
85P3068	5												MT 3	KK 3	CR 2	FD 2		KK32		0.1	5.9
85P3069	6												KK 3	MT 3	FD 2	CR 1		KK17		0.1	5.5

ANALYSES: S=ALL ON SIEVED < 2mm BASIS

MINERALOGY: FA = FRACTION ANALYZED RE = RESISTANT

KIND OF MINERAL: CR = CRISTOBALITE MT = MONTMORILLONITE KK = KAOLINITE FD = FELDSPAR

RELATIVE AMOUNT: 6 INDETERMINATE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

MINERALOGY BASED ON SAND/SILT:

MINERALOGY BASED ON CLAY:

FAMILY PLACEMENT:

COMMENTS:

63

Series: Tupi
Soil Survey # S85-FN-725-017
Location: Granada, Bacolod, Negros Occ.
Latitude: 10-38-48-N

NSSL ID #: 85P0591

Longitude: 123-06-50-E

Classification:
Physiography: Broad plain in piedmonts
Microrelief:
Slope Characteristics: 24
Precipitation: 2710 mm Udic moisture regime
Water Table Depth: 100 cm
Drainage: Well drained

Permeability: Moderate
Land Use: Cropland

Stoniness:

Parent Material: alluvium from pyroclastic material over residuum from pyroclastic material
Diagnostic Horizons: 0 to 29 cm Mollic, 29 to 72 cm Cambic
Described by: A. Dayot, Dr. R. Yeck

Date: 01/85

7 months wet, 2 months dry.

Ap--0 to 21 cm; very dark grayish brown (10YR 3/2) silt loam; massive parting to weak fine and medium granular; friable, smeary, nonsticky, nonplastic; many fine and few medium roots; common fine tubular pores; very strongly acid; diffuse wavy boundary.
85P3042

A3--21 to 29 cm; very dark gray (10YR 3/1) and very dark grayish brown (10YR 3/2) silt loam; massive parting to weak fine granular; friable, nonsticky, nonplastic; many fine roots; few fine tubular pores; medium acid; clear wavy boundary.
85P3043

Bw--29 to 56 cm; brown to dark brown (10YR 4/3) silt loam; few fine distinct dark yellowish brown (10YR 3/4) mottles; friable, nonsticky, nonplastic; few fine roots; few fine tubular pores; medium acid; gradual wavy boundary.
Presence of some krotovinas; few fine coconut roots; some root holes and earthworm holes filled with clay and OM material from upper horizon (organo-argillans) presence of some porous volcanic pebbles and stones (breccia).
85P3044

Bwg--56 to 72 cm; gray (10YR 5/1) fine sandy loam; massive; friable, nonsticky, nonplastic; few fine roots; slightly acid; gradual wavy boundary.
More compact in the lower layer of the horizon; presence of few fine 3 mm to 1.5 cm diameter irregular and subrounded volcanic pebbles (breccia), presence of krotovinas with gray (10YR 5/1) color along surfaces.
85P3045

C--72 to 102 cm; gray (10YR 5/1) coarse sandy loam; massive; friable, nonsticky, nonplastic; neutral; clear smooth boundary.
Split for sampling at 89 cm; few fine and some medium coconut roots; presence of some porous pebble size irregular and subrounded weathering volcanic breccia.
85P3046

Crm--102 to 144 cm; yellowish brown (10YR 5/4) sand; many fine and medium distinct dark yellowish brown (10YR 3/6) mottles; ; neutral.
Welded coarse sand with pebble and stone size breccia. Welded volcanic pebbles and stone (Breccia), presence of krotovinas and coconut root holes filled with clay and OM from upper layer.
85P3048

DEP cm	HORI- ZON	DRY COLOR		MOIST COLOR		TEXTURE	STRUCTURE	NL # 85P-	CONSISTENCE				ROOTS		PH	BD RY	
		1	2	1	2				D	M	OTH	WET	1	2			
0-21	Ap			10YR	3/2	SIL	0 MA ->1FMGR	3042	FR	SM	SO	PO	M	1			
21-29	A1			10YR	3/1	10YR 3/2	SIL	0 MA ->1F GR	3043	FR	SO	PO	M	1	F 2	5	DW
29-56	Bw			10YR	4/3		SIL		3044	FR	SO	PO	F	1		5.6	CW
56-72	Bwq			10YR	5/1		FSL	0 MA	3045	FR	SO	PO	F	1		6	CW
72-102	C			10YR	5/1		COSL	0 MA	3046	FR	SO	PO				6.5	GW
102-144	Crm			10YR	5/4		S		3048							7	CS

LOW PORES DEP	1	2	CONCRETIONS		EFF ERV	MOTTLES 1	2	COATS ON PED SURFACES				VOL% LTTL	CLAY PCT	SOIL MST
			1	2				K	AC	T	L			
021	TUC	1												
029	TUF	1												
056	TUF	1												
144								F 1 D 10YR 3/4						
								M 12D 10YR 3/6						

HORIZON # 3 Presence of some krotovinas; few fine coconut roots; some root holes and earthworm holes filled with clay and OM material from upper horizon (organo-argillans) presence of some porous volcanic pebbles and stones (breccia).

HORIZON # 4 More compact in the lower layer of the horizon; presence of few fine 3 mm to 1.5 cm diameter irregular and subrounded volcanic pebbles (breccia), presence of krotovinas with gray (10YR 5/1) color along surfaces.

HORIZON # 5 Split for sampling at 89 cm; few fine and some medium coconut roots; presence of some porous pebble size irregular and subrounded weathering volcanic breccia.

HORIZON # 6 Welded coarse sand with pebble and stone size breccia. Welded volcanic pebbles and stone (Breccia), presence of krotovinas and coconut root holes filled with clay and OM from upper layer.

5

TUPI

DATE PRINTED 12/20/85

S 85FN-725 -037

PROJECT: PHILIPPINES-FORUM

GENERAL METHODS 1B1A, 2A1, 2B

SAMPLE NO. 85P3042-3048
 PEDON NO. 85P 591
 PROJECT NO. 85P 111

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 NATIONAL SOIL SURVEY LABORATORY
 LINCOLN, NEBRASKA 68508-3866

				-1--	-2--	-3--	-4--	-5--	-6--	-7--	-8--	-9--	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-	-20-
				(- - - TOTAL - - -)		(- - CLAY - -)		(- - SILT - -)		(- - - SAND - - - - -)				(- - COARSE FRACTIONS(MM) - -)(>2MM)									
SAMPLE NO.	HZN NO.	DEPTH (CM)	HORIZON	CLAY	SILT	SAND	FINE	CO3	FINE	COARSE	VI	I	M	C	VC	WEIGHT				WT			
				LT	.002	.05	LT	LT	.002	.02	.05	.10	.25	.5	1	2	5	20	.1	WT	WT		
				-> PCT OF <2MM (3A1) - - - - ->		-> PCT OF <2MM (3A1) - - - - ->		-> PCT OF <2MM (3A1) - - - - ->		-> PCT OF <2MM (3A1) - - - - ->		-> PCT OF <2MM (3A1) - - - - ->		-> PCT OF <2MM (3A1) - - - - ->		-> PCT OF <2MM (3A1) - - - - ->		-> PCT OF <2MM (3A1) - - - - ->		-> PCT OF <2MM (3A1) - - - - ->			
853042	1S	0-21	AP	3.9	31.0	65.1	--		16.7	14.3	16.4	24.7	13.3	6.6	4.1	1	2	--	--	--	50	3	
853043	2S	21-29	AB	4.0	38.4	57.6	--		22.5	15.9	14.8	22.3	11.6	5.4	3.5	1	1	--	--	--	44	2	
853044	3S	29-56	BW	--	10.4	89.6	--		5.7	4.7	14.6	33.7	25.5	12.9	2.9	TR	TR	--	--	--	75	--	
853045	4S	56-72	BWG	0.5	21.0	78.5	--		11.0	10.0	12.2	24.5	25.0	12.5	4.3	1	TR	--	--	--	67	1	
853046	5S	72-89	BWG	0.9	17.5	81.6	--		9.2	8.3	9.0	23.4	31.0	13.4	4.8	1	1	--	--	--	73	2	
853047	6S	89-102	C	1.3	22.4	76.3	--		11.3	11.1	8.4	15.7	24.9	20.2	7.1	1	TR	--	--	--	68	1	
853048	7S	102-144	CR	--	16.5	83.5	--		7.3	9.2	9.8	20.0	18.3	16.5	18.9	9	4	--	--	--	77	13	

SAMPLE NO.	HZN NO.	ORGN C	TOTAL N	EXTR P	TOTAL S	(- - DIH-CIT - -) (RATIO/CLAY) (ATTERBERG) (- BULK DENSITY -) COLL (- - WATER CONTENT - -) WRD																
						FE	AI	MN	CIC BAR	15	FIELD	1/3	OVEN	WHOLE	FIELD	1/10	1/3	15	WHOLE			
						EXTRACTABLE	LL	PI	MOIST	BAR	DRY	SOIL	MOIST	BAR	BAR	BAR	SOIL					
						6R3A	6C2B	6C7A	6D2A	8D1	8D1	4A1	4A1	4A3A	4A1D	4A1H	4D1	4B4	4B1C	4B1C	4B2A	5C1
						-> PCT OF <2MM - - - - ->		-> PCT OF <2MM - - - - ->		-> PCT OF <2MM - - - - ->		-> PCT OF <2MM - - - - ->		-> PCT OF <2MM - - - - ->		-> PCT OF <2MM - - - - ->		-> PCT OF <2MM - - - - ->		-> PCT OF <2MM - - - - ->		
853042	1	2.94	0.210			0.7	0.6	TR	3.33	2.72				1.35	1.40	0.012				29.5	10.6	0.25
853043	2	2.79	0.207			0.8	0.7	TR	3.68	3.28				1.23	1.28	0.013				35.0	13.1	0.27
853044	3	1.09	0.088			0.7	0.7	0.1			59	1									17.4	
853045	4	0.45				0.5	0.4	TR	14.80	27.20				1.03	1.07	0.013				36.2	13.6	0.23
853046	5	0.29				0.6	0.3	--	6.56	12.11				1.24	1.28	0.011				25.2	10.9	0.18
853047	6	0.27				0.8	0.3	--	4.77	9.38				1.26	1.28	0.005				25.3	12.2	0.16
853048	7	0.14				0.5	0.2	--						1.33	1.34	0.002				21.0	6.0	0.19

*** CONTINUATION ON NEXT PAGE ***

N S S L
S U P P L E M E N T A L D A T A S H E E T

TUPI

S85FN-725-037

SAMPLE NO.	HZN NO.	P RETENT 654 PCT	(ACID-OXALATE EXTRACT)					pH		(WATER CONTENT)	
			OPT DEN 8J	AL ₂ O ₃ 6G12A	FE 6C9A	SI 6V2	KCl 8C1G	MOIST H ₂ O 1:1	MOIST CaCl ₂ .01M 1:2	15-BAR MOIST 4B2B	15-BAR DRY 4B2A
			<-----PCT----->							<-----PCT----->	
85 3042	1	77	0.24	2.80	0.44	1.31	4.5	5.1	4.6	13.7	10.6
85 3043	2	85	0.22	3.05	0.48	1.46	4.7	5.2	4.8	18.9	13.1
85 3044	3	94	0.07	3.30	0.19	1.41	5.6	6.4	5.9	44.6	17.4
85 3045	4	77	0.09	2.87	0.35	1.71	5.4	6.2	5.7	25.4	13.6
85 3046	5	64	0.06	1.93	0.24	1.06	5.2	6.2	5.5	16.9	10.9
85 3047	6	65	0.05	2.00	0.40	1.15	5.1	5.2	4.6		12.2
85 3048	7	42	0.09	1.32	0.62	0.78	4.9	6.2	5.5	7.7	6.0

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CP85FN154

SAMPLE NO.	HZN NO.	OPTICAL SAND/SILT											MINERALOGY				X-RAY			DTA		(TOT ANAL)	
		FA	RE	7B1A	7A21	7A21	7A21	7A21	7A21	7A3	7A3	K20	FE										
		PCT											RELATIVE AMOUNTS				PCT		603A	6C7A			
85P3042	1																				0.3	2.2	
85P3043	2																				0.3	2.3	
85P3044	3	FNES	1	GA71	FP11	GS 5	HN 5	FP 2	OP 1	HN 1	PR 1	FP 1									0.5	1.9	
85P3045	4																				0.3	1.7	
85P3046	5																				0.3	2.1	
85P3047	6	FNES	3	GA41	FP20	HN12	GS 8	FG 7	HG 5	OP 3	AR 1	PR 1									0.3	4.4	
85P3048	7																				0.3	4.4	

ANALYSES: S-ALL ON SIEVED < 2mm BASIS

MINERALOGY: FA = FRACTION ANALYZED RE = RESISTANT

KIND OF MINERAL: NX = NON-CRYSTALLINE OP = OPAQUES BI = BIFLITE FP = PLAGIOCLASE FELDSPAR GA = GLASS AGGREGATES

GS = GLASS HN = HORNLENDE PR = PYROXENE HG = GLASS COATED HORNLENDE FG = GLASS COATED FELDSPAR

AR = WEATHERED AGGREGATES

RELATIVE AMOUNT: 6 INDETERMINATE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

MINERALOGY BASED ON SAND/SILT:

MINERALOGY BASED ON CLAY:

FAMILY PLACEMENT:

COMMENTS:

861

Series: Silay
Soil Survey # SB5-FN-725-018
Location: Silay, Negros Occ.
Latitude: 10-46-00-N

Classification:
Physiography: Broad plain
Microrelief:
Slope Characteristics: 18
Precipitation: 2710 mm Ustic moisture regime
Water Table Depth: 90 cm
Drainage: Moderately well drained
Stoniness:

Parent Material: alluvium from mixed material
Diagnostic Horizons: 0 to 20 cm Mollic, 20 to 58 cm Cambic
Described by: A. Dayot, Dr. R. Yeck

NSCL ID #: 85P0592

Longitude: 123-01-15-E

Elevation: 25 m MSL

Permeability: Moderate
Land Use: Cropland

Date: 01/85

7 months wet, 2 months dry.

Ap--0 to 20 cm; sandy loam; very dark gray (10YR 3/1) moist; massive parting to weak fine and medium granular; friable, nonsticky, nonplastic; few fine roots; few fine tubular pores; strongly acid; gradual wavy boundary.
85P3049

Bw1--20 to 38 cm; clay loam; brown to dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; friable, nonsticky, nonplastic; few fine roots; few fine tubular pores; medium acid; diffuse wavy boundary.
85P3050

Bw2--38 to 58 cm; fine sandy loam; strong brown (7.5YR 5/6) moist; few fine faint strong brown (7.5YR 4/6) mottles; massive parting to weak fine and medium subangular blocky; friable, nonsticky, nonplastic; few fine roots; few fine tubular pores; diffuse wavy boundary.
85P3051

Bg--58 to 89 cm; fine sandy loam; reddish gray (5YR 5/2) moist; few fine faint brown to dark brown (7.5YR 4/4) mottles; massive parting to weak to moderate fine and medium subangular blocky; friable, nonsticky, nonplastic; few fine roots; common fine tubular pores; slightly acid; diffuse wavy boundary.
85P3052

Cg--89 to 150 cm; sandy loam; reddish gray (5YR 5/2) moist; few fine dark yellowish brown (10YR 4/4) mottles; massive parting to subangular blocky; friable, nonsticky, nonplastic; few fine tubular pores; neutral.
Pores are oblique.
85P3053

SILAY

DATE PRINTED 12/20/85

S 851N-725 -038

SAMPLE NO. 85P3049-3053

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NATIONAL SOIL SURVEY LABORATORY
LINCOLN, NEBRASKA 68508-3866

PROJECT: PHILIPPINIS-FORUM

PIDON NO. 85P 592

PROJECT NO. 85P 111

GENERAL METHODS 1B1A, 2A1, 2B

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

SAMPLE NO.	HZN NO.	DEPTH (CM)	HORIZON	(- - -TOTAL - - -)(- -CLAY- -)(- -SILT- -)(- - - - -SAND- - - - -)(- -COARSE FRACTIONS(MM)- -)(>2MM)										(- - -WEIGHT - - -) WT							
				CLAY	SILT	SAND	FINE	CO3	FINE	COARSE	VF	F	M	C	VC	2	5	20	75	PCT OF	
				LT	.002	.05	11	LT	.002	.02	.05	.10	.25	.5	1	2	5	20	75	WHOLE	
							.0002	.002	.02	.05	.10	.25	.50	1	2	5	20	75		PCT OF	
853049	1S	0-20	AP	11.4	25.5	63.1	11.4		9.2	16.3	20.1	32.4	9.1	1.3	0.2	--	--	--		43	--
853050	2S	20-38	BW1	26.0	22.9	51.1	14.5		12.1	10.8	16.3	26.9	7.2	0.7	--	--	--			35	--
853051	3S	38-58	BW2	17.5	19.4	63.1	10.1		9.8	9.6	14.6	33.9	12.3	1.8	0.5	--	--	--		48	--
853052	4S	58-89	BWG	12.7	20.3	67.0	6.6		9.2	11.1	21.4	33.7	8.6	2.0	1.3	--	--	--		46	--
853053	5S	89-	CG	7.1	19.6	73.3	3.7		10.0	9.6	21.5	44.1	7.1	0.6	--	--	--			52	--

SAMPLE NO.	HZN NO.	ORGN TOTAL		EXTR TOTAL		(- - -DITH-CIT - -)(RATIO/CLAY)(ATTERBERG)(- - BULK DENSITY - -) COLE (- - -WATER CONTENT - -) WRD				EXTRACTABLE				FIELD 1/3 OVEN WHOLE FIELD 1/10 1/3 15 WHOLE									
		C	N	P	S	FE	AI	MN	CLC	BAR	15	LIMITS	FIELD	1/3	OVEN	WHOLE	FIELD	1/10	1/3	15	WHOLE		
		6A1C	6B3A								LI	PI	MOIST	BAR	DRY	SOIL	MOIST	BAR	BAR	BAR	SOIL		
											4F1	4F	4A3A	4A1D	4A1H	4D1	4B4	4B1C	4B1C	4B2A	4C1		
853049	1	1.00	0.074			1.1	0.2	TR	0.64	0.61						1.73	1.77	0.008			17.1	7.0	0.17
853050	2	0.69	0.058			2.1	0.3	0.1	0.42	0.61						1.43	1.52	0.021			26.9	15.8	0.16
853051	3	0.44				2.4	0.3	0.1	0.53	0.79		33	11										13.9
853052	4	0.26				2.1	0.3	0.1	0.64	0.92						1.62	1.67	0.010			22.0	11.7	0.17
853053	5	0.15				1.1	0.1	--	1.27	1.39			NP			1.54	1.58	0.009			20.8	9.9	0.17

*** CONTINUATION ON NEXT PAGE ***

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N S S L
S U P P L E M E N T A L D A T A S H E E T

SILAY

S85FN-725-038

SAMPLE NO.	HZN NO.	P RETENT PCT	(ACID-OXALATE EXTRACT)					(pH)		(WATER CONTENT)		
			OPT DEN	AL	FE	SI	KCl	MOIST H ₂ O 1:1	MOIST CaCl ₂ .01M 1:2	15-BAR MOIST 4B2B	15-BAR DRY 4B2A	
			8J	6G12A	6C9A	6V2	8C1G					
				<-----PCT----->								
85 3049	1	23	0.11	0.22	0.56	0.06	4.4					
85 3050	2	44	0.15	0.37	0.79	0.10	3.8			8.6	7.0	
85 3051	3	36	0.09	0.27	0.59	0.10	4.6			24.0	15.8	
85 3052	4	30	0.08	0.22	0.47	0.10	5.0			20.2	13.9	
85 3053	5	22	0.04	0.16	0.21	0.05	5.0			15.9	11.7	
										13.5	9.9	

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CP85FN154

SAMPLE NO.	HZN NO.	MINERALOGY												X-RAY		DTA	TOT ANAL					
		SAND/SILT												CLAY			K2O	FE				
		FA	RE	7B1A	7A2I	7A2I	7A2I	7A2I	7A2I	7A3	7A3	603A	6C7A									
				PCT										RELATIVE AMOUNTS								
85P3049	1													KK 3	CR 1				KK 5		0.6	4.9
85P3050	2													KK 3	CR 1				KK24		0.3	4.6
85P3051	3	FNES	10	FP40	HN 1	GA10	AR 9	OP 5	RA 5	BT 4	GS 2	AM 2							KK21		0.2	4.9
85P3052	4													KK 3	CR 1				KK20		0.1	4.4
85P3053	5													KK 2					KK15		0.2	3.5

ANALYSES: S-ALL ON SIFVED - 2mm BASIS

MINERALOGY: FA = FRACTION ANALYZED RE = RESISTANT

KIND OF MINERAL: CR = CRISTOBALITE KK = KAOLINITE OP = OPAQUES RA = RESISTANT AGGREGATES AM = AMPHIBOLE

AR = WEATHERED AGGREGATES BT = BIOTITE FP = PLAGIOCLASE FELDSPAR GA = GLASS AGGREGATES GS = GLASS

HN = HORNLENDE

RELATIVE AMOUNT: 6 INDETERMINATE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

MINERALOGY BASED ON SAND/SILT:

MINERALOGY BASED ON CLAY:

FAMILY PLACEMENT:

COMMENTS:

5

Series: Isabela
Soil Survey # 885-FN-725-041
Location: Hda. San Jose, San Carlos City, Negros Occ.
Latitude: 10-29-10-N

NSSL ID #: 85P0595

Classification:
Physiography: in coastal plains
Microrelief:

Longitude: 123-23-45-E

Slope Characteristics: 1%
Precipitation: 3000 mm Aquic moisture regime
Water Table Depth:

Elevation: 10 m MSL

Drainage: Moderately well drained
Stoniness:

Permeability: Very slow
Land Use: Cropland

Parent Material: alluvium from mixed material
Diagnostic Horizons: 0 to 23 cm Mollic, 23 to 63 cm Cambic, 63 to 94 cm Argillic
Described by: A. Dayot and Dr. R. Yeck

Date: 01/85

Bw and C horizon on distance show brown color on the profile and grayish color in the bottom horizon. 7 months wet and 3 months dry.

Ap--0 to 23 cm; very dark gray (10YR 3/1) clay; weak medium and coarse subangular blocky structure; firm, slightly sticky, slightly plastic; few fine roots; few fine tubular pores; clear smooth boundary.
85P3070

Bw--23 to 63 cm; brown to dark brown (10YR 4/3) clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine tubular pores; gradual wavy boundary.
Split for sampling at 43 cm. Concentrations of more very dark gray (10YR 3/1) along peds and pore faces; presence of illuviation clay and OM along peds and channel pores.
85P3071

C--63 to 94 cm; dark grayish brown (10YR 4/2) silty clay loam; massive parting to weak fine and medium subangular blocky; friable, slightly sticky, slightly plastic; common fine tubular pores; gradual wavy boundary.
Open random pores with gleyed color on ped and pore faces; some fine roots.
85P3073

2Bg--94 to 140 cm; very dark gray (10YR 3/1) clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine tubular pores; gradual wavy boundary.
Split for sampling at 116 cm. Open oblique and random pores; presence of illuviation clay on ped faces.
85P3074

2Cg--140 to 179 cm; dark gray (10YR 4/1) clay loam; massive parting to weak fine and medium subangular blocky; friable, slightly sticky, slightly plastic.
85P3076

DEP cm	HORI- ZON	DRY	DRY	MOIST	MOIST	TEXTURE	STRUCTURE	NL #	CONSISTENCE			ROOTS		PH	BD RY
		COLOR 1	COLOR 2	COLOR 1	COLOR 2				D	M	OTH	WET	1		
0-23	Ap			10YR	3/1	C	1MCSBK	3070	FI	SS	SP	F 1			
23-63	Bw			10YR	4/3	CL	2FMSBK	3071	FR	SS	SP				CS
63-94	C			10YR	4/2	SICL	0 MA ->1PMSBK	3073	FR	SS	SP				GW
94-140	2Bq			10YR	3/1	CL	2FMSBK	3074	FR	SS	SP				GW
140-179	2Cq			10YR	4/1	CL	0 MA ->1PMSBK	3076	FR	SS	SP				GW
LOW PORES		CONCRETIONS		EFF MOTTLES			COATS ON PED SURFACES								
DEP 1	2	1	2	ERV 1		2	K A C T L HUE		K A C T L HUE		VOL%	CLAY	SOIL		
											LTTL	PCT	MST		
023	TUF 1														
063	TUF 1														
094	TUC 1														
140	TUC 1														

HORIZON # 2 Split for sampling at 43 cm. Concentrations of more very dark gray (10YR 3/1) along peds and pore faces; presence of illuviation clay and OM along peds and channel pores.

HORIZON # 3 Open random pores with gleyed color on ped and pore faces; some fine roots.

HORIZON # 4 Split for sampling at 116 cm. Open oblique and random pores; presence of illuviation clay on ped faces.

N S S I
S U P P L E M E N T A L D A T A S H E E T

ISABELA

S85FN-725-041

SAMPLE NO.	HZN NO.	P RETENT 654 PCT	(ACID-OXALATE EXTRACT)				(pH)		(WATER CONTENT)		
			OPT DEN 8J	AL 6G12A	FE 6C9A	SI 6V2	KCl 8C1G	MOIST H ₂ O 1:1	MOIST CaCl ₂ .01M 1:2	15-BAR MOIST 4B2B	15-BAR DRY 4B2A
			<-----PCT----->						<-----PCT----->		
85 3070	1	18	0.15	0.40	0.88	0.16	5.7	7.6	6.6	25.3	22.5
85 3071	2	31	0.17	0.57	1.15	0.22	5.4	7.5	6.7	31.2	24.6
85 3072	3	27	0.21	0.56	1.69	0.26	5.2	7.4	6.4	25.7	20.4
85 3073	4	21	0.18	0.52	1.34	0.24	5.1	7.4	6.4	26.4	20.8
85 3074	5	24	0.09	0.45	0.71	0.20	5.1	7.2	6.4	29.3	25.6
85 3075	6	23	0.09	0.42	0.66	0.17	5.1	7.0	6.5	29.7	26.8
85 3076	7	23	0.09	0.42	0.68	0.17	5.1	7.3	6.4	30.1	26.2

80

Series: Isabel Satellite
Soil Survey # S85-FN-325-042
Location: Hda. Valmayor, San Carlos City, Negros Occ.
Latitude: 10-29 10-N

NSSL ID #: 85P0596

Classification:
Physiography: in coastal plains
Microrelief:

Longitude: 123-23-15-E

Slope Characteristics: 11
Precipitation: 1000 mm Aquic moisture regime
Water Table Depth:

Elevation: 6 m MSL

Drainage: Somewhat poorly drained
Stoniness:

Permeability: Slow
Land Use: Cropland

Diagnostic Horizons: 0 to 24 cm Ochric, 24 to 121 cm Cambic
Described by: A. Dayot and Dr. R. Yeck

Date: 01/85

This profile site was 300-400 m E of profile pit No. S85-FN 325-042 but closer to base slope of low coastal mountain range. Site may be a transitional area due to its closeness to the hill slope. 7 months wet and 3 months dry.

Ap--0 to 24 cm; black (10YR 2/1) clay; strong medium and coarse angular blocky structure; very sticky, very plastic; few fine roots; few fine tubular pores; clear wavy boundary.
85P3077

Bwg--24 to 43 cm; yellowish brown (10YR 5/4) clay; moderate fine and medium subangular blocky structure; very sticky, very plastic; few fine roots; few distinct gray (10YR 5/1) clay films on faces of peds and in pores; gradual wavy boundary.
85P3078

Bg1--43 to 73 cm; grayish brown (10YR 5/2) and brown to dark brown (7.5YR 4/4) clay; weak fine and medium subangular blocky structure; very sticky, very plastic; common fine tubular pores; gradual wavy boundary.
Presence of dark gray (10YR 5/1) gray color along peds and pores; presence of illuviated clay along peds and pores, few weathering stones and pebbles.
85P3079

Bg3--73 to 121 cm; grayish brown (10YR 5/2) clay; weak fine and medium subangular blocky structure; friable, sticky, plastic; common fine roots; few fine tubular pores; gradual wavy boundary.
Common weathering irregular hard pebbles and stones.
85P3080

Cr--121 to 139 cm; brown (10YR 5/3) and gray (10YR 5/1) gravelly sandy clay loam; friable.
Weathering stones and pebbles manifesting brown and gray color along external faces.
85P3081

nb

DEP cm	HORI ZON	DRY COLOR 1	DRY COLOR 2	MOIST COLOR 1	MOIST COLOR 2	TEXTURE	STRUCTURE	BL # R.P.	CON. INTER. E D M OTH WET	ROOTS 1 2	PH	BD RY
0-24	Ap			10YR 2/1		C	IMCARK	3077				
24-43	Bwq			10YR 5/4		C	2FMSBK	3078		VS VP F 1		CW
43-73	Bg1			10YR 5/2	7.5YR 4/4	C	1FMSBK	3079		VS VP F 1		CW
73-121	Bg3			10YR 5/2		C	1FMSBK	3080		VS VP		CW
121-139	Cr			10YR 5/3	10YR 5/1	GRSCL		3081	FR	S P C 1		CW
LOW PORES		CONCRETIONS		EFF MOTTLES			COATS ON PED SURFACES					
DEP 1 2		1 2		ERV 1		2	K AC T L HUE		K AC T L HUE	VOLA LTTL	CLAY PCT	SOIL MST
024	TUF 1											
043												
073	TUC 1											
121	TUF 1											

T F D F 10YR 5/1

- HORIZON # 2 Common to many irregular hard stones and pebbles.
HORIZON # 3 Presence of dark gray (10YR 5/1) gray color along peds and pores; presence of illuviated clay along peds and pores, few weathering stones and pebbles.
HORIZON # 4 Common weathering irregular hard pebbles and stones.
HORIZON # 5 Weathering stones and pebbles manifesting brown and gray color along external faces.

ISABELA

DATE PRINTED 12/20/55

S 851N-725 -042-

SAMPLE NO. 85P3077-3081
 PIDON NO. 85P 596
 PROJECT NO. 85P 111

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 NATIONAL SOIL SURVEY LABORATORY
 LINCOLN, NEBRASKA 68508-3866

PROJECT: PHILIPPINES-FORUM

GENERAL METHODS 1B1A, 2A1, 2B

		-1--	-2--	-3--	-4--	-5--	-6--	-7--	-8--	-9--	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-	-20-			
SAMPLE NO.	HZN NO.	DEPTH (CM)	HORIZON	(- - - TOTAL - - -)													(- - - COARSE FRACTIONS (MM) - - -)							
				CLAY	SILT	SAND	LINE	CO3	FINI	COARSI	VI	I	M	C	VC	WGT	W1	W2	W3	W4	W5	W6	W7	
				0.002	0.05	0.2	0.002	0.002	0.02	0.05	0.10	0.25	0.5	1	2	5	20	75	100	100	100	100		
				-- PCI OF <2MM (3A1) --													-- PCI OF <75MM (3B1) --							
853077	1S	0-24	AP	57.4	30.1	12.5	29.8																	
853078	2S	24-43	BWC	70.2	19.5	10.3	49.1																	
853079	3S	43-73	BC1	38.1	25.1	36.8	22.0																	
853080	4S	73-121	BC2	24.0	22.3	53.7	12.0																	
853081	5S	121-139	CR	20.6	19.6	59.8																		

SAMPLE NO.	HZN NO.	ORGN TOTAL C N		EXTR TOTAL P S		EXTRACTABLE				CIC		BAR		MOIST		OVER WHOLE		WATER CONTN		WTD WHOLE	
		6A1C	6B3A	6R3A	6C2B	6G7A	6D2A	8D1	8D1	4F1	4F1	4A3A	4A1D	4A1H	4D1	4B0	4B1C	4B1C	4B2A		4C1
				-- PCI OF <2MM --								-- G/GC --		-- CM/CM --		-- PCI OF <2MM --					
853077	1	1.78	0.120			3.8	0.3	0.2	0.91	0.51											
853078	2	0.50	0.048			3.5	0.4	0.1	0.67	0.48			99	62						29.2	
853079	3	0.29				2.8	0.3	0.2	1.03	0.70										33.8	
853080	4	0.17				2.3	0.2	0.1	1.97	0.90			56	27						26.5	
853081	5	0.11				1.2	0.1	0.1	2.50	1.02					1.06	1.31	0.064			41.3	
														2.09		2.17		0.008		11.2	
																				21.6	
																				21.0	

*** CONTINUATION ON NEXT PAGE ***

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CPB3FN154

SAMPLE NO.	HZN NO.	OPTICAL		MINERALOGY										X-RAY		DTA		TOT ANAL			
		FA	RE	SAND/SILT										CLAY				K2O	FE		
		7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7A2I	7A2I	7A2I	7A2I	7A2I	7A3	7A3	603A	6C7A
		PCT										RELATIVE AMOUNTS					PCT				
85P3077	1												MT 4	KK 3	GE 1			KK28		0.5	6.4
85P3078	2												MT 3	KK 3	GE 1			KK37		0.4	6.1
85P3079	3												MT 3	KK 3	GE 1			KK 12		0.5	6.1
85P3080	4												MT 3	KK 3	GE 1			KK 14		0.4	5.5
85P3081	5																				

ANALYSES: SHALL ON SIEVED + 2mm BASIS

MINERALOGY: FA = FRACTION ANALYZED RE = RESISTANT

KIND OF MINERAL: GE = GOETHITE MT = MONTMORILLONITE KK = KAOLINITE

RELATIVE AMOUNT: 5 INDETERMINATE 4 DOMINANT 3 ABUNDANT 2 MODERATE 1 SMALL 0 TRACE

MINERALOGY BASED ON SAND/SILT:

MINERALOGY BASED ON CLAY:

FAMILY PLACEMENT:

COMMENTS:

CENTRAL VISAYAS

Region VII

Region VII, Central Visayas is composed of 4 provinces, Negros Oriental, and the island provinces of Cebu, Bohol and Siquijor (Figure 6). A common language, Cebuano binds the provinces aside from the geographical proximity to one another. The Central Visayas was previously a part of the Eastern Visayas Region the regional administration of which was in Cebu.

Geologically, the cones of the island provinces are the cretaceous volcanics with small areas that are ultrabasics and acid intrusive (Figure 7). Pliocene and Pleistocene volcanics are limited to the southern one-third of the province of Negros Oriental. The major portions of the region are sedimentaries most of which are reef limestones and calcareous shales and sandstones. Quarternary alluvia are found only in small pockets in the narrow inland valleys and along the fringing coastal plains associated with short generally turbulent streams and former lagoons and backswamp areas associated with reefs or beach dunes. Figure 8 shows the soil map and location of pedon in Region VII. Climatic data such as rainfall pattern (Figure 9) is also shown.

Being the most densely populated among the regions covered by the tour and having the most mountainous physiographic conditions, mountains are totally denuded and even steep hillside are used for the production of the staple crop, corn. Corn is the primary grain staple crop of the region. In wetlands unsuitable for corn production rice which generally produced more grains per unit land area is increasingly being grown, particularly in Bohol and in Negros Oriental where potential irrigation system sources are tapped. White corn (Tiniguib variety) is grown even on hillside with more than 120% slope gradients resulting to yields less than .5 t/ha.

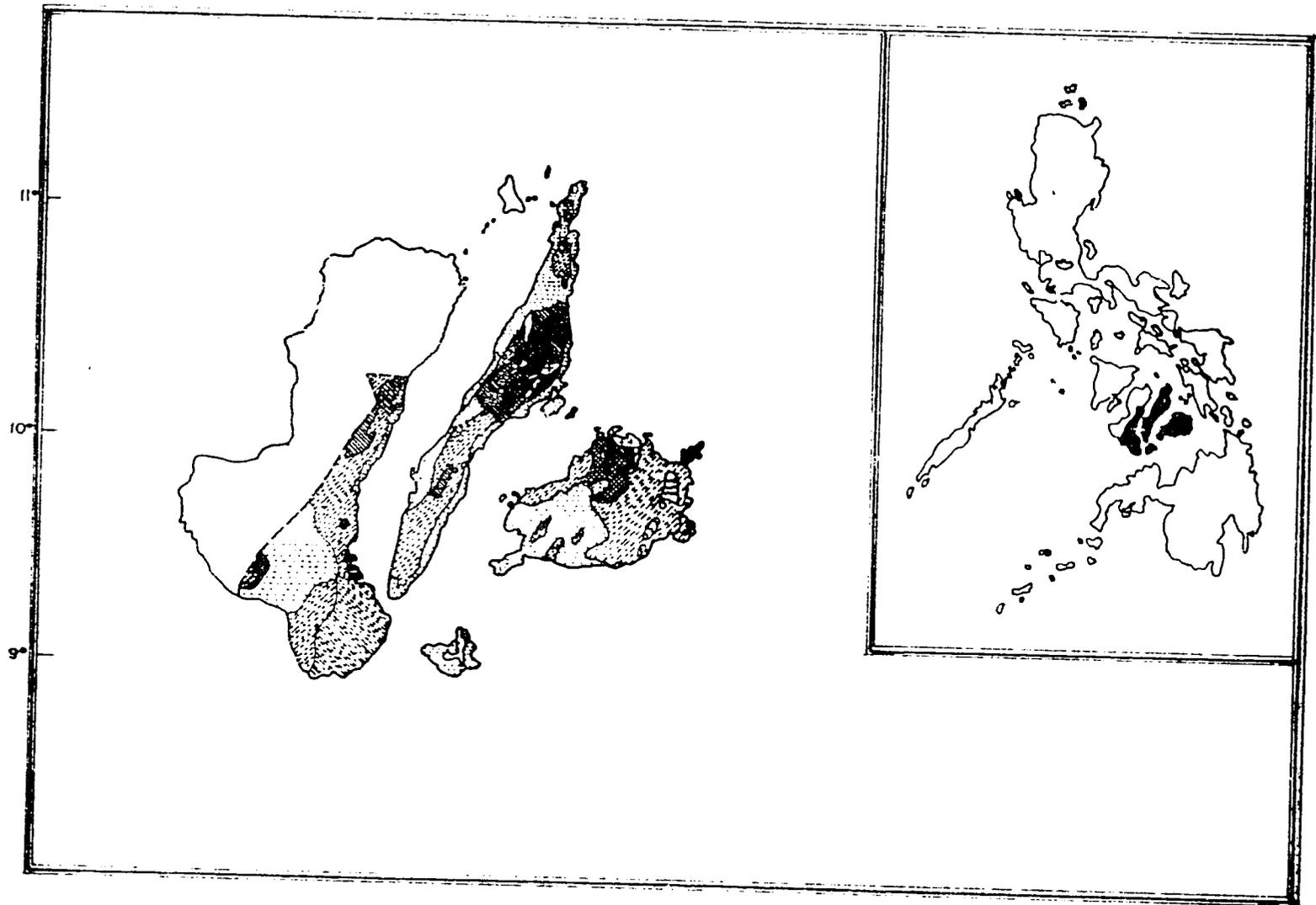
Hillyland farming systems development focuses mainly on erosion control and introduction of soil conservation promoting systems as ipil-ipil (Leucaena sp.) and grass hedge rows or planting on contour bunks.

The Central Visayas Regional Projects and the Regional Ministry of Agriculture and Food spearhead studies on this aspect to assist the provincial government's effort in food production. Aside for the upland agriculture development, off-shore projects involving the establishment of artificial reefs, and mangrove replanting are conducted to restore the natural habitat of the dwindling fish population caused by the exploitation of these natural habitat and breeding places of fish. Restoration of the forest covers are also being conducted through the social forestry and or lease hold concepts on the areas of forestry reservations. It is anticipated that lease holders while growing their food needs will gradually reforest the area from where they can later obtain income on a more permanent basis and consequently restore the ecological balance as well.

4/12/61



Figure 6. Map of the Philippines showing the provinces of Region VII (darkened areas).



49
Figure 7. Geologic map of Central Visayas Region.

Soil Map of Region VII (Negros Oriental, Cebu and Bohol)

Legend:

1 - Hydrosol	176 - Butuan CL
43 - Mountain Soils, Undiff.	177 - Cadijaj C
56 - Taal SL	178 - Inabanga C
95 - San Manuel fSL	179 - Butuan-Faraon Complex
118 - Beach Sand	180 - Baluarte CL
132 - Faraon C	190 - San Manuel L
152 - River Wash	202 - Rough Mountainous Land
153 - Bolinao C	214 - Butuan C
154 - Bolinao C (Stp)	224 - Ubay SL
155 - Faraon C (Stp)	228 - Bantog C
156 - Lugo C	229 - Annam C
157 - Mandaue CL	240 - Mandaue C
158 - Mandaue SiL	256 - Isabela C
159 - Medellin C	267 - Guimbalaon L (Gr)
160 - Mantalongon CL	270 - Tupi fSL
169 - Baguio CL	271 - Tupi SiL
171 - Rough Stony Land	305 - La Castella C
172 - Ubay CL	414 - San Manuel-Taal Complex
173 - Ubay C	415 - Davin C
174 - Sevilla C	416 - Davin SL
175 - Calape CL	417 - Siaton SL
	418 - Zamboanguita CL
	708 - La Castellana CL (Stp)

INFORMATION ON SPECIFIC TOUR ROUTE AND STOPS (Region VII)

The Central Visayas:

Landing in Toledo Cebu after a 2-hour boat ride from San Carlos City, the characteristic landforms of coralline limestone are still obvious. The island of Cebu is dominantly of uplifted coralline limestone with small outcrops of basaltic material (Mapped as Baguio series) at the middle center of the island and evidences of soils (Mantalongon series) derived from recycled acid intrusive materials serving as the core at the Southern section of the island.

Pedon 9 and Pedon 19 are both mapped as Mandaue series which in concept is derived from alluvia coming from coralline limestone area and are deposited to form narrow coastal lowland fringes. The landscape position makes this series a very important and production soil for cultivated crops particularly in the province of Cebu and of lesser extents in Negros Oriental, Masbate, Catanduanes and Zamboanga del Norte. Other soils of pedologic and edaphologic interests occur in the Central Visayas region but the soils are not accessible within the time frame of the Forum tour.

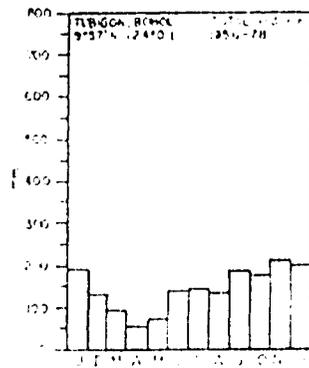
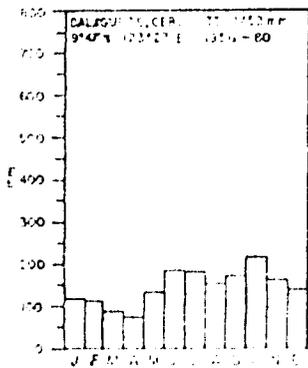
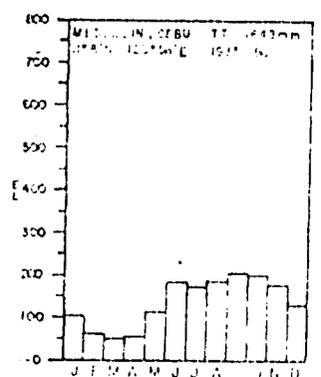
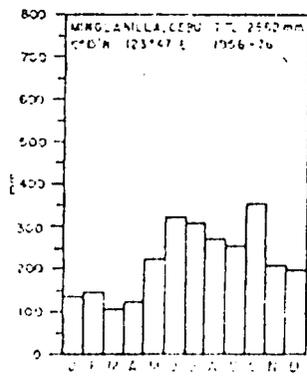
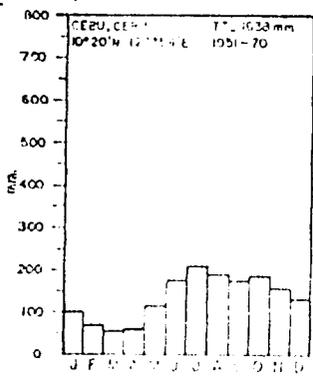


Figure 9. Rainfall pattern in Central Visayas Region.

Series: Mandawe
Soil Survey # SR5-FN-725-043
Location: Estacia, Compostela, Cebu.
Latitude: 10-26 00-N
Classification:
Physiography: Broad plain
Microrelief:
Slope Characteristics: 1%
Precipitation: 1640 mm Ustic moisture regime
Water Table Depth:
Drainage: Well drained
Stoniness:
Parent Material: alluvium from mixed-calcareous material
Diagnostic Horizons: 0 to 16 cm Ochric, 16 to 66 cm Cambic
Described by: A. Dayot, Dr. R. Yeck, R. Raymundo, N. Marasigan

NSDL ID #: 85P0597

Longitude: 123-59-40-E

Elevation: 7 m MSL

Permeability: Moderate
Land Use: Cropland

Date: 01/85

IIB1 and IIB2 horizon may be a buried profile. Upper layer may be a recent deposition, outwash from upper areas adjacent to the area. 1 month wet and 3 months dry.

Ap--0 to 16 cm; very fine sandy loam; brown to dark brown (10YR 4/3) moist; massive parting to weak fine and medium granular; very friable, nonsticky, nonplastic; common very fine roots; common very fine tubular pores; gradual wavy boundary.
85P3082

Bw1--16 to 34 cm; silty clay loam; dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; very friable, nonsticky, nonplastic; common fine roots; common very fine tubular pores; gradual wavy boundary.
Common coconut roots.
85P3083

Bw2--34 to 42 cm; fine sandy loam; dark yellowish brown (10YR 4/4) moist; few fine distinct 43 (7.5YR 4/3) mottles; massive parting to weak fine and medium granular; friable, nonsticky, nonplastic; common fine roots; abrupt wavy boundary.
Few coconut roots
85P3084

Bw3--42 to 66 cm; fine sandy loam; dark yellowish brown (10YR 4/4) moist; massive parting to moderate fine and medium subangular blocky; nonsticky, slightly plastic; few fine roots; gradual wavy boundary.
Few coconut roots.
85P3085

2B1--66 to 97 cm; clay loam; very dark gray (10YR 3/1) moist; moderate to strong fine and medium subangular blocky structure; friable, sticky, plastic; few fine roots; few fine tubular pores; gradual wavy boundary.
More compact than upper horizon, presence of some black stains on ped faces. Horizon split for sampling.
85P3086

2B2--97 to 150 cm; clay loam; yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky structure; friable, sticky, plastic; common fine tubular pores.
Presence of dark gray (10YR 3/1) color on peds and pore faces; few coconut roots.
85P3088

OK

DEP cm	HORI- ZON	DRY COLOR 1	DRY COLOR 2	MOIST COLOR 1	MOIST COLOR 2	TEXTURE	STRUCTURE	RI # BSP-	CONSISTENCE D M CTH WET	ROOTS 1 2	PH	BD RY
0-16	Ap			10YR 4/3		VFSL	0 MA ->1FMGR	3082	VFR	SO PO C VI		
16-34	Bw1			10YR 4/4		MICL	1FMGR	3083	VFR	SO PO C 1		GW
34-42	Bw2			10YR 4/4		PSL	0 MA ->1FMGR	3084	FR	SO PO C 1		GW
42-66	Bw3			10YR 4/4		PSL	0 MA ->2FMSBK	3085		SO SP P 1		AW
66-97	2B1			10YR 3/1		CL	6FMSBK	3086	FR	S P P 1		GW
97-150	2B2			10YR 5/4		CL	1FMSBK	3088	FR	S P		GW

LOW PORES DEP 1	CONCRETIONS 1 2	EFP MOTTLES ERV 1	COATS ON PED SURFACES K AC T L HUE	K AC T L HUE	VOL% LTTL	CLAY PCT	SOIL MST
016 TUC V1							
034 TUC V1							
042							
097 TUF 1							
150 TUC 1							

P 1 D 7.5YR 4/3

- HORIZON # 2 Common coconut roots.
- HORIZON # 3 Few coconut roots
- HORIZON # 4 Few coconut roots.
- HORIZON # 5 More compact than upper horizon, presence of some black stains on ped faces. Horizon split for sampling.
- HORIZON # 6 Presence of dark gray (10YR 3/1) color on peds and pore faces; few coconut roots.

95-

DATE PRINTED 12/30/85

MANDAWI

S 851N-725 -043

PLOTON NO. 850 597

NATIONAL SOIL SURVEY LABORATORY

	-1--	-2--	-3--	-4--	-5--	-6--	-7--	-8--	-9--	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-	-20-		
	(- NH4OAC EXTRACTABLE BASES -) ACID-										(- -CFC- -) EXCH		SAR	BASE		-CO3 AS PHS.		CASO4 AS		(- - - - -) (- - - - -)		
SAMPLE NO.	HN	5B5A	5B5A	5B5A	5B5A	5B5A	5B5A	5B5A	5B5A	5B5A	5B5A	5B5A	5B5A	5B5A	5B5A	5B5A	5B5A	5B5A	5B5A	5B5A		
	NO.	6N2I	6O2D	6P2B	6Q2B	6R5A	6S1A	6S8B	6O2	6I	6I	6I	6I	6I	6I	6I	6I	6I	6I	6I		
		-MEQ / 100 G-										PCT										
853082	1		3.8	0.2	0.3						27.1	1	IR			3				7.9	7.6	7.9
853083	2		4.0	0.2	0.3						26.0	1	IR		100	3				7.8	7.5	8.0
853084	3		3.0	0.2	0.2						23.6	1	IR		100	2				7.9	7.5	7.9
853085	4		3.2	0.2	0.3						26.7	1	IR		100	1				7.8	7.5	7.9
853086	5	29.1	3.9	0.1	0.4	33.5	4.0			37.5	31.0	IR	IR	89	100	--				7.5	7.3	7.6
853087	6	28.9	5.3	0.1	0.4	34.7	4.9			39.6	32.8			88	100	--				7.5	7.3	7.6
853088	7	27.6	6.2	0.1	0.4	34.3	6.2			40.5	31.7	IR	IR	89	100	IR	1500			7.6	7.3	7.6

(- - - - -) WATER EXTRACTED FROM SATURATED PASTE (- - - - -)

(- - - - -) MINERALOGY (- - - - -)

	CA	MG	NA	K	CO3	HCO3	Cl	SO4	NO3	H2O	SALTS	COND.	X RAY		DIA		TOTAL BOM			
SAMPLE NO.	HN	6N1R	6O1R	6P1R	6Q1R	6I1R	6J1R	6K1R	6L1R	6M1R	RA	BD5	MMHOS	7A21	7A21	7A21	7A21	7A21	7B1A	
		-MEQ / LITER-										PCT								
853082	1	5.9	1.3	0.3	TR	--	2.2	6.4	3.9	0.5	46.8	IR	0.71	MI 3	KK 3	GI 2			KK 4	
853083	2	4.3	0.8	0.4		--	2.2	0.3	2.5	0.2	54.4	IR	0.53	MI 4	KK 3	GI 2			KK 4	
853084	3	4.2	0.6	0.4		--	1.8	0.3	2.7	0.1	69.7	IR	0.50	MI 3	KK 3	GI 1			KK 4	
853085	4	4.8	0.7	0.4		--	1.7	0.3	3.5	0.1	54.1	IR	0.57	MI 4	KK 3	GI 1			KK 5	
853086	5	5.4	0.9	0.4	IR	--	1.7	0.3	4.2	--	58.5	IR	0.63	MI 5	KK 3	OZ 1	GI 1	KK 6		
853087	6												0.73							
853088	7	5.3	1.4	0.4	0.1	--	1.3	0.3	4.8	--	64.2	IR	0.67						7.1	1K19

AVERAGES, DEPTH 25-100: PCT CLAY 28 PCT 11-75MM 12

MMHOS/CM OF 1:2 WATER EXTRACT (81) FOR LAYERS 6.

ANALYSES: S= ALL ON SIEVED <2MM BASIS

MINERALOGY: KIND OF MINERAL MT MONTMORILL KK KAOLINITE GI GOETHITE IX POTAS-FELD OZ QUARTZ
 RELATIVE AMOUNT 6 INDETERMINATE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

Series: Mandawe

Soil Survey # S85-FN-725-045

Location: Talisay Poblacion, Talisay, Cebu.

Latitude: 10-15-25-N

Classification:

Physiography: Broad plain coastal in

Microrelief:

Slope Characteristics: 1%

Precipitation: 1640 mm Ustic moisture regime

Water Table Depth: 130 cm

Drainage: Moderately well drained

Stoniness:

Parent Material: alluvium from mixed material

Diagnostic Horizons: 0 to 18 cm Mollic, 49 to 104 cm Cambic

Described by: A. Dayot, Dr. R. Yeck, and N. Marasigan

NSSL ID #: 85P0599

Longitude: 123-50-45-E

Permeability: Moderate

Land Use: Cropland

Date: 01/85

1 month wet and 3 months dry.

Ap--0 to 18 cm; clay; very dark grayish brown (10YR 3/2) moist; few fine distinct dark yellowish brown (10YR 4/4) mottles; massive parting to weak fine and medium subangular blocky; friable, slightly sticky, slightly plastic; few very fine and fine roots; few fine tubular pores; moderately alkaline; gradual wavy boundary.
85P3096

BA--18 to 34 cm; clay; very dark gray (10YR 3/1) moist; few fine and medium distinct brownish yellow (10YR 6/6) mottles; moderate coarse columnar structure parting to columnar parting to subangular blocky; friable, sticky, plastic; few very fine roots; common fine tubular pores; few rounded iron-manganese concretions; moderately alkaline; gradual wavy boundary. Prominent gray color on ped faces; presence of tubular and ped cutans material.
85P3097

AB--34 to 49 cm; clay; very dark gray (10YR 3/1) moist; common prominent yellowish brown (10YR 5/6) mottles; weak medium and coarse columnar structure parting to subangular blocky; friable, sticky, slightly plastic; moderately alkaline; diffuse wavy boundary. Presence of thin patchy cutans along peds and pores; presence of few fine rounded Fe-Mn concretions.
85P3098

Bw1--49 to 78 cm; clay; yellowish brown (10YR 5/8) moist; moderate coarse columnar structure parting to weak fine and medium subangular blocky; friable, sticky, plastic; few fine iron-manganese concretions; moderately alkaline; gradual wavy boundary. Presence of organo-argillans on peds and tubular pores, presence of oblique and random open pores.
85P3099

Bw2--78 to 133 cm; clay; yellowish brown (10YR 5/8) moist; many fine and medium prominent dark gray (10YR 4/1) mottles; moderate coarse columnar structure parting to moderate fine and medium subangular blocky; friable, sticky, plastic; few iron-manganese concretions; moderately alkaline; gradual wavy boundary. Few fine random and oblique pores, presence of some clay cutans along pores. Horizon split for sampling.
85P3100

C--133 to 150 cm; clay loam; brownish yellow (10YR 6/8) moist; many fine and medium prominent dark gray (10YR 4/1) mottles; weak fine and medium subangular blocky structure; friable, sticky, plastic; few iron-manganese concretions; moderately alkaline. Common fine tubular pores on oblique and random pores.
85P3002

DEP cm	HORI- ZON	DRY COLOR		MOIST COLOR		TEXTURE	STRUCTURE	SL. # RSP-	CONSISTENCE			ROOTS		PH	RD RY
		1	2	1	2				D	M	OTH	WET	1		
0-18	Ap			10YR	3/2	C	0 MA ->1FMSBK 3096		FR	SS	SP	F 11			
18-34	BA			10YR	3/1	C	2COCOL->0FMCOL 3097		FR	S	P	F VI	8	GW	
34-49	AB			10YR	3/1	C	1MCCOL->0FMSBK 3098		FR	S	SP		8	GW	
49-78	Bw1			10YR	5/8	C	2COCOL->1FMSBK 3099		FR	S	P		8	GW	
78-133	Bw2			10YR	5/8	C	2COCOL->2FMSBK 3100		FR	S	P		8	GW	
133-150	C			10YR	6/8	CL	1FMSBK 3002		FR	S	P		8	GW	

LOW DEP	PORES		CONCRETIONS			EFP ERV	MOTTLES		COATS ON PED SURFACES		VOL% LTTL	CLAY PCT	SOIL MST
	1	2	1	2					K	A			

018	TUF	1					P 1 D 10YR 4/4						
034	TUC	1	M3F	O			F 12D 10YR 6/6						
049							C P 10YR 5/6						
078			M3F	1									
133			M3F				M 12P 10YR 4/1						
150			M3F				M 12P 10YR 4/1						

LOW DEP	THICKNESS			ROCK FRAG			3RD DRY COLOR	3RD MOIST COLOR	FIELD MEAS	3RD STRUC	3RD MOTTLE	3RD COAT
	AVE	MAX	MIN	1	2	3						

034

0FMSBK

- HORIZON # 2 Prominent gray color on ped faces; presence of tubular and ped cutans material.
- HORIZON # 3 Presence of thin patchy cutans along peds and pores; presence of few fine rounded Fe-Mn concretions.
- HORIZON # 4 Presence of organo-argillans on peds and tubular pores; presence of oblique and random open pores.
- HORIZON # 5 Few fine random and oblique pores; presence of some clay cutans along pores. Horizon split for sampling.
- HORIZON # 6 Common fine tubulans on oblique and random pores.

DATE PRINTED 12/20/85

MANDAWI

S 853N-725-5005

PIDON NO. 85P-599 NATIONAL SOIL SUPPLY LABORATORY

SAMPLE NO.	HZN NO.	(- NH4OAC EXTRACTABLE BASIS -)				ACIDITY	EXTRACT	(- CEC -)		AL	-BASE	SAT	CO3	AS	RES.	COND. (- - - PH - - -)				
		CA	MG	NA	K			SUM	MIQ							BASIS	AL	SOM	PH	CaCO3
853096	1	28.9	8.6	0.2	0.4	38.1	7.4													
853097	2	30.5	8.9	0.3	0.3	40.0	8.3				84	100						5.7	6.7	7.1
853098	3	29.4	10.7	0.3	0.3	40.7	6.6				83	100						6.0	7.0	7.4
853099	4	28.1	10.6	0.4	0.3	39.4	6.1				86	100						5.5	6.8	7.4
853100	5	28.3	11.4	0.5	0.2	40.4	5.2				87	100						5.5	6.8	7.4
853101	6	26.5	10.0	0.4	0.2	37.1	5.6				89	100						5.4	6.9	7.5
853102	7		10.1	0.4	0.2						87	100						5.6	6.9	7.7

SAMPLE NO.	HZN NO.	(- MINERALOGY - - - - -)							
		(- - - - - CLAY - - - - -)				(- - - - - X-RAY - - - - -)			
		(- - - - - DIA - - - - -)				(- - - - - 2U - - - - -)			
		RELATIVE AMOUNTS				RELATIVE AMOUNTS			
853096	1								
853097	2	MI 4	VR 3	KK 3	GI 1	KK22			
853098	3	MI 3	VR 3	KK 3	GI 1	KK21			
853099	4	MI 3	VR 3	KK 3	GI 1	KK19			
853100	5	MI 3	VR 3	KK 3	GI 1	KK11			
853101	6								
853102	7	MI 4	KK 3	VR 2	GI 1	KK13			

AVERAGES, DEPTH 25-100: PCT CLAY 40 PCT .1-75MM 9

ANALYSES: S= ALL ON SIEVED <2MM BASIS

MINERALOGY: KIND OF MINERAL MI MONTMORILL VR VERMICULITE KK KAOLINITE GI GOETHITE
 RELATIVE AMOUNT 6 INDETERMINATE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

102

N S S L
S U P P L E M E N T A L D A T A S H E E T

MANDAWE

S85FN-725-045

SAMPLE NO.	HZN NO.	P RETENT 654 PCT	(ACID-OXALATE EXTRACT)				pH		(WATER CONTENT)		
			OPT DEN 8J	AL 6G12A	FE 6C9A	SI 6V2	KCl 8C1G	MOIST H ₂ O 1:1	MOIST CaCl ₂ .01M 1:2	15-BAR MOIST 4B2B	15-BAR DRY 4B2A
			<-----PCT----->						<-----PCT----->		
85 3096	1						5.7	7.1	6.6	18.4	17.3
85 3097	2						6.0	7.3	6.5	21.4	18.1
85 3098	3						5.5	7.4	6.6	23.8	21.6
85 3099	4						5.5	7.4	6.6	22.9	20.2
85 3100	5						5.4	7.8	6.9	21.7	19.2
85 3101	6						5.6	7.6	6.7	20.5	17.9
85 3102	7						6.6	8.3	8.1	19.9	16.2

EASTERN VISAYAS

Region VIII

Eastern Visayas is composed of two major islands, Leyte and Samar (Figure 10). From island provinces recent subdivision into small provinces resulted into 2 Leyte Provinces. Leyte and Southern Leyte; and 3 Samar Provinces, Western Samar, Eastern Samar, and Northern Samar. Cebuano is spoken in the western part of Leyte Province and Southern Leyte while Waray also a Visayan language is spoken in Eastern Leyte and the 3 Samar Provinces.

The oldest formations in the region are of cretaceous sediments and ultrabasic volcanics which are in considerable extent (Figure 11). Only a small area of intermediate and acid intrusive is found in the south-western part of Leyte Province. A relatively extensive area of Quarternary alluvium is found in the northeastern section of Leyte and a much less extensive area at the western section. Narrow fringing coastal plain areas are generally found in small pockets in the two islands. Figure 12 shows the soil map and location of pedons in Region VIII.

Although the least populated among the 4 regions, mountains are all denuded by logging operations and aggravated by slash and burn cultivation.

Climatically, Eastern Visayas are in the humid belt with no dry season (Figure 13). The available information are limited to Leyte and Western Samar. Trade winds (Easterlies) provide sufficient rainfall during the winter and spring months of the Northern hemisphere. Season is also characterized by the occurrence of typhoon emanating from the Pacific Ocean, enters the Philippine area of responsibility and cuts across the country only is many highly destructive occasions. The typhoon rains during the northern summer and autumn month contribute considerably to the rains in the country as a whole. The Eastern

Visayas and the Bicol Regions normally receive the first impact of incoming typhoons.

Despite the relatively low population pressure, hillylands and steeply rolling uplands are being cultivated for the production of white corn, also the staple crop of the region. Rice production have increased considerably. Many wetland soil areas however, are infested with the dreaded parasite worms disease known as schistosomiasis which the government is taking efforts to eradicate. Root crops as cassava, sweet potatoes, taro are food crops that also receive considerable attention. The Visayas State College of Agriculture (VISCA) has developed a nationally accepted high yielding, short season variety of sweet potato, and is the lead institution in the root crop research in the country. Coconuts and abaca (Manila hemp) are the main industrial and export crops of the region. Sugarcane is produced only around Ormoc, Leyte. Recent efforts to hasten the development of this region include hydrothermal energy development project in Leyte, area development project (with the assistance from the government of Australia) in Northern Samar and the Ministry of Agriculture and Food (USAID-assisted) Project on Rainfed Resources Development Project (RRDP).

Kcb

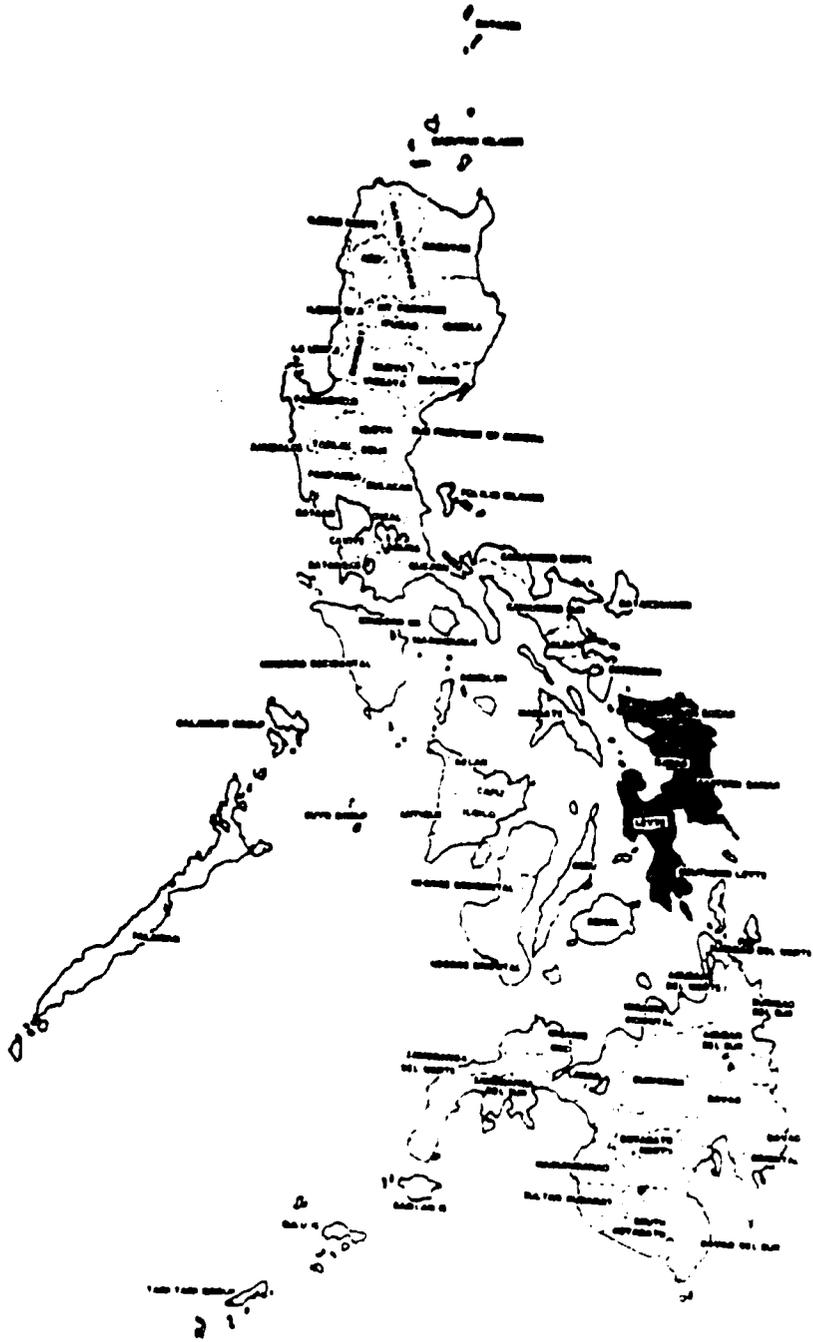


Figure 10. Map of the Philippines showing the provinces of Region VIII (darkened areas).

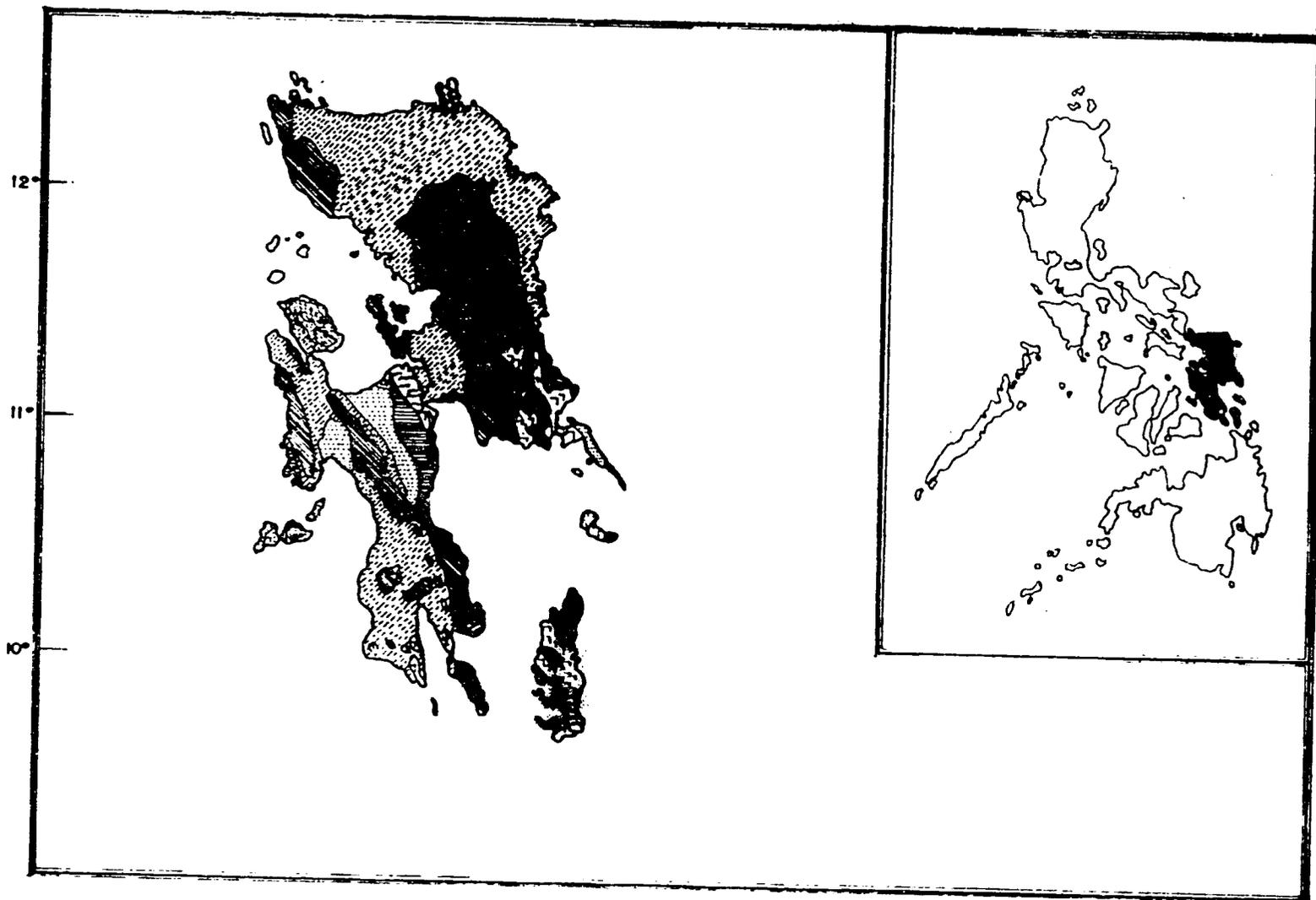


Figure 11. Geologic map of Eastern Visayas Region.

107

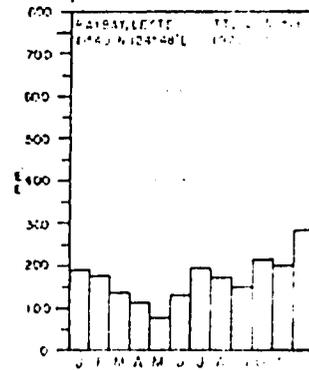
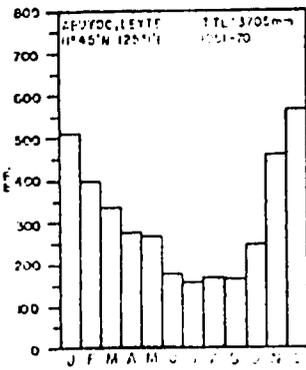
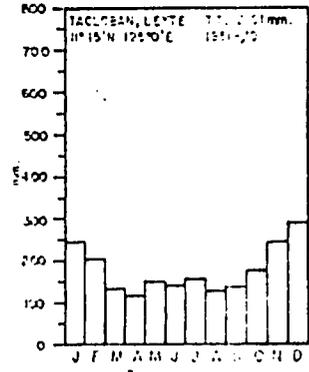
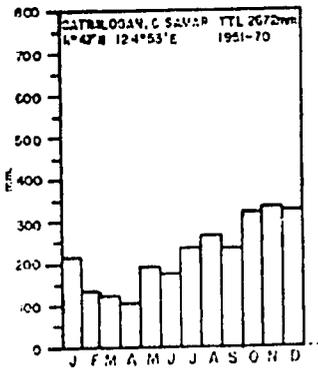


Figure 13. Rainfall pattern in Samar and Leyte.

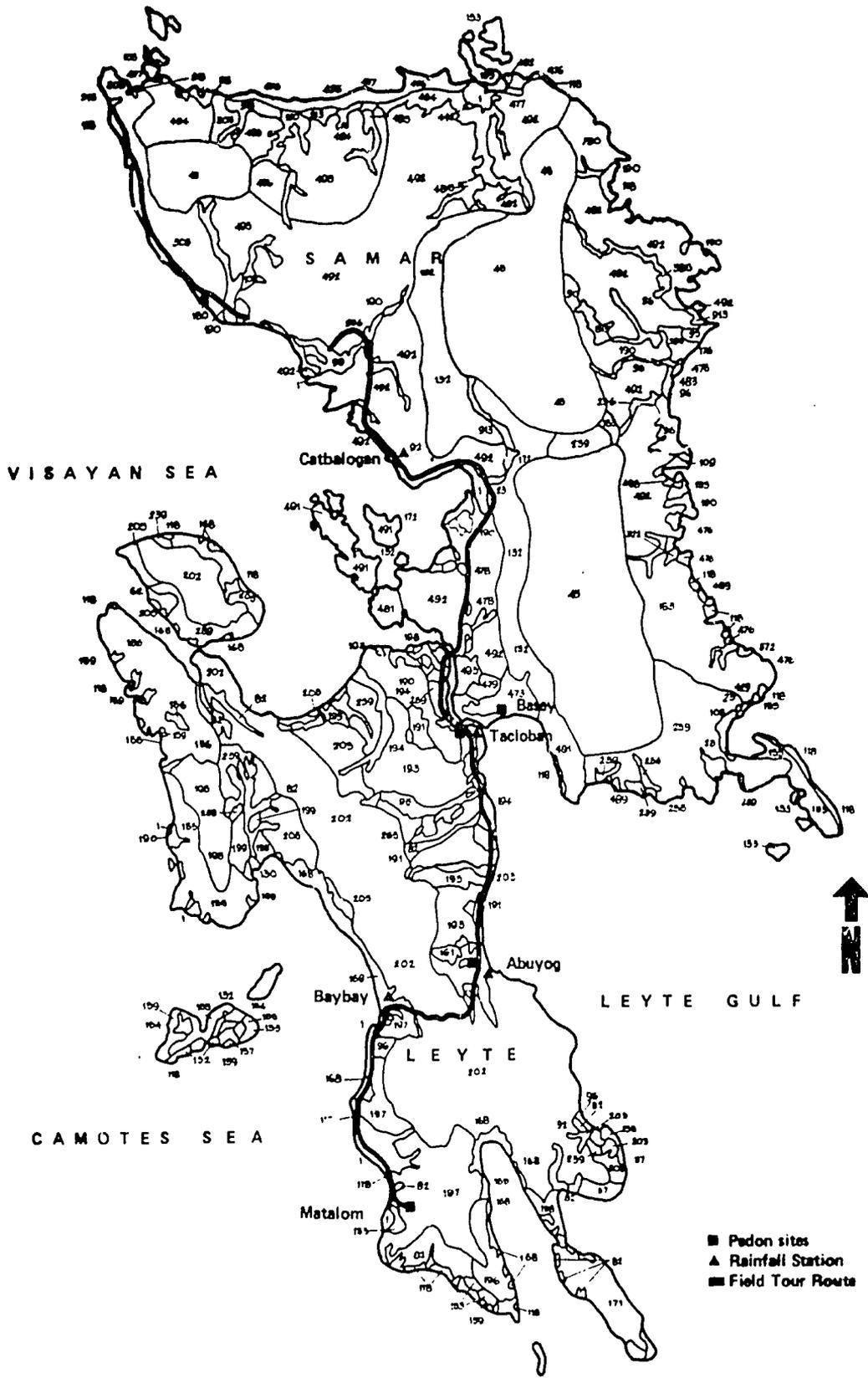


Figure 12. Soils map of Eastern Visayas, Region VIII, Philippines, showing also the locations of the pedon sites and rainfall stations.

Soil Map of Region VIII (Leyte and Samar)

Legend:

1 - Hydrosol	202 - Rough Mountainous Land
16 - Bantog CL	203 - Obando FS
23 - Bay CL	204 - Dagami CL
45 - Mountain Soil, Undiff.	205 - Guimbalaon C
57 - Taal fSL	236 - San Manuel CL
82 - San Manuel SiL	239 - Louisiana C
95 - San Manuel fSL	240 - Mandaue C
96 - San Manuel SL	253 - Silay L
109 - Quingua CL	255 - Pulupandan SL
116 - Beach Sand	305 - La Castellana C
122 - Umingan fSL	322 - Umingan L
132 - Faraon C	385 - Quingua C
153 - Bolinao C	476 - Bugko LS
155 - Faraon C (Stp)	477 - Bugko SL
156 - Lugo C	478 - Tingib C
159 - Medellin C	479 - Dolongan L
168 - Umingan CL	483 - Bigaa SL
171 - Rough Stone Land	484 - Catubig L
172 - Ubay CL	485 - Catubig CL
190 - San Manuel L	487 - Palapag CL
191 - Pawing fSL	488 - Maydolong SL
193 - Palo CL	489 - Maydolong SCL
194 - Tacloban C	490 - Hernani L
195 - Palompon C	491 - Tacloban CL
196 - Malitbog C	492 - Catbalogan CL
197 - Maasin C	493 - Tingib-Catbalogan Complex
198 - Hinayangan CL	494 - Libertad C
199 - San Manuel Soil, Undiff.	495 - Bryho CL
200 - Guimaras SCL	730 - Lugo CL
201 - Faraon-Bolinao Complex	923 - Bigaa L

INFORMATION ON SPECIFIC TOUR ROUTE AND STOPS (Region VIII)

The Eastern Visayas Region:

Pedons 11 and 12 are in Leyte and Pedons 13 and 14 are in Samar. After the technical sessions in the Visayas College of Agriculture (ViSCA), in Baybay, Leyte a profile similar to Pedon 11, Maasin Series will be studied in a different site. The Maasin series, identified and mapped only in Leyte, occupies the undulating to rolling crests of moderately to strongly dissected intermediate uplands underlain by weakly to strongly stratified uplifted marine pyroclastics. This deep soil is mainly grown to coconuts and perennials. Open spaces are cultivated to corn, cassava, upland rice and other annual crops.

Although quite limited in extent, as presently mapped, similar soils could be expected in many undifferentiated soil areas of the perhumid uplands in the Philippines.

Pedon 13 (SND) has the characteristics similar to that of the Malitbog series which presently identified only in Leyte. The Malitbog series are associated with basalt-andesites rocks and conglomerates on steep slopes. This makes the soil akin to the Paete series in Eastern Laguna Province which aside from slope and parent materials has very similar climatic condition (perudic) and land use.

Pedon 13, Dolongan series, in Basey Samar is the only series so far mapped and identified as an organic soils which can sustain prolonged cultivation in the country. Other areas seemingly of organic soils components rapidly decompose and mineral soil results. Organic material deposited in the Saba Basin also in Leyte subside below sea level when drained that salt water intrudes into the area. The rare drought in 1967 caused considerable drying of the Dolongan peat. Peat fires occurred and the press termed it the "burning soils of Samar". This is also the area of kneeling coconut trees or coconut trees with spiral trunks. The estimates of area is quite variable but the soil area is not only interesting scientifically and important agronomically. In hilly rugged island like Samar any small area of level land has an important role in food production.

Pedon 14 (Catbalogan series) represents a vast area of rolling, hilly, and mountainous land forms in Samar Island. The soils are derived from weakly stratified thick deposits of marine pyroclastics normally at lower positions in the slope compared to the areas of coralline limestone which in turn form an almost complete ring around the volcanic mountain range along the center.

The Catbalogan series has been identified and mapped only in Samar Island. The extent of the area and the problems associated with this soil for crop production justify the need for more detailed studies on the management and conservation. The rainfall pattern in this area is ideal for year round crop production but strong typhoon winds magnify the risk factor in agricultural production and the distance of the province from markets and population centers reduces the viability of crop enterprises.

BICOL REGION

Region V

Bicol Region is composed of 6 provinces: Camarines Norte, Camarines Sur, Albay, and Sorsogon in the Bicol Peninsula at the southeastern part of Luzon and the Catanduanes and Masbate Island Provinces (Figure 14). They are bound together by geographic proximity to one another. Even if the language for the area is termed Bicolano, there are differences in dialects which have varying degrees of Visayan influence.

The peninsular provinces are in general of younger geologic formations (Figure 15). The oldest of which are the upper Miocene sediments and pyroclastics. The peninsula is dotted with active volcanic vents, the most active of which is the well-known Mayon Volcano, which presently is considered the almost perfect cone. The island provinces of Catanduanes and the Caramoran peninsula in the Northern part of Camarines Sur Province, are of the Carboniferous metamorphics, Cretaceous to Paleocene and Oligocene sediments and volcanics. Masbate's oldest formations are of the Cretaceous to Paleocene metavolcanics and sediments. Reef limestone of the upper Miocene to Pleistocene and associated gravels and waterlaid pyroclastics are associated with coastal areas except where recent volcanic deposits were superimposed. The provinces of Albay and Camarines Sur are gifted by more extensive and more level alluvial areas compared to the other 4 provinces.

Figure 16 shows the soil map and location of pedons in Region V.

The Bicol Region is characterized by two climatic types, one with short dry season and the other with no dry season (Figure 17a and 17b). Typhoon rains considerably contributes to the wet N summer and autumn months. The easterlies which contribute to the rainfall during the northeast monsoon in the eastern and northern section of the peninsula do not contribute much along the southwestern section and the rain shadow areas.

Series: Maasin
Soil Survey # 885-FN-725-047
Location: Matalom, Leyte.

NSSL ID #: 85P0601

Latitude: 10-15 39-N

Longitude: 124-47-57-E

Classification:

Physiography:

Microrelief:

Slope Characteristics:

Precipitation: 1980 mm Ustic moisture regime

Elevation: 3 m MSL

Water Table Depth:

Permeability: Moderate

Air Temperature: Ann: 28, Sum: 28, Min:

Drainage: Well drained

Stoniness:

Described by: M. R. Recel, R. Yeck, R. Badayos, N. Marasigan

Date: 01/85

All colors and other properties were described at moist condition. 5 months wet and 2 months dry.

Ap--0 to 11 cm; clay loam; dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; firm, slightly sticky, slightly plastic; common fine roots; few fine dendritic tubular pores; few coarse worm casts; clear smooth boundary.
Roots are inped and expd.
85P3108

BA--11 to 28 cm; clay; yellowish brown (10YR 5/6) moist; subangular blocky; slightly sticky, slightly plastic; few fine and medium roots; common tubular pores; few faint clay films; gradual smooth boundary.
Roots are vertical, pores are random and open.
85P3109

Bw1--28 to 58 cm; clay; strong brown (7.5YR 5/6) moist; weak fine prismatic structure; firm, slightly sticky, slightly plastic; very few fine roots; common very fine tubular pores; few faint clay films; few fine iron-manganese concretions; gradual smooth boundary.
85P3110

Bt1--58 to 83 cm; clay; strong brown (7.5YR 5/8) moist; strong very coarse prismatic structure; firm, sticky, plastic; very few fine and medium roots; common fine tubular and few coarse tubular pores; common faint clay films in root channels and/or pores and clay films between sand grains; common very fine iron-manganese concretions; gradual smooth boundary.
85P3111

Bt2--83 to 125 cm; clay; strong brown (7.5YR 5/8) moist; strong coarse prismatic structure; firm, sticky, plastic; few coarse roots; common fine tubular pores; common very fine iron-manganese concretions and very few insects casts; gradual smooth boundary.
85P3112

Bw--125 to 200 cm; clay; reddish yellow (7.5YR 6/8) moist; strong coarse prismatic structure parting to subangular blocky; firm, slightly sticky, slightly plastic; few medium and few very fine roots; common fine dendritic tubular and few coarse dendritic tubular pores; few fine iron-manganese concretions.
85P3113

DEP cm	HORI- ZON	DRY COLOR		MOIST COLOR		TEXTURE	STRUCTURE	NO. # 851-	CONSISTENCE			ROOTS		PH	RD RY
		1	2	1	2				D	M	OTH WET	1	2		
0-11	Ap			10YR	4/4	CL	1FMSBK	3108	FI	SS	SP	C 1			
11-28	BA			10YR	5/6	C	0MCSBK	3109		SS	SP	F 12			CS
28-58	Bw1			7.5YR	5/6	C	1F PR	3110	FI	SS	SP	VF1			GS
58-83	Bt1			7.5YR	5/8	C	3VCPR	3111	FI	S	P	VF12			GS
83-125	Bt2			7.5YR	5/8	C	3COPR	3112	FI	S	P	F 3			GS
125-200	Bw			7.5YR	6/8	C	3COPR ->0F SBK	3113	FI	SS	SP	P 2	P V1		GS
LOW PORES			CONCRETIONS	EPF	MOTTLES		COATS ON PED SURFACES					VOLA	CLAY	SOIL	
DEP 1	2	1	2	ERV 1	1	2	K AC T L HUE	K AC T L HUE				LTTL	PCT	MST	
011	TEF 1		T2F 3												
028	TUC														
058	TUC V1		M3F 1				T F F								
083	TUC 1 TUF 3		M3C V1				T F F								
125	TUC 1		M3C V1 T3VF				T C F I								
200	TEC 1 TEF 3		M3F 1												

HORIZON # 1 Roots are inped and exped.
HORIZON # 2 Roots are vertical, pores are random and open.

MAASIN

DATE PRINTED 12/20/85

S 85FN-725 -047

PROJECT: PHILIPPINES-FORUM

GENERAL METHODS 1B1A, 2A1, 2B

SAMPLE NO. 85P3108-3113
 PLOON NO. 85P 601
 PROJECT NO. 85P 111

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 NATIONAL SOIL SURVEY LABORATORY
 LINCOLN, NEBRASKA 68508-3866

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10-- -11-- -12-- -13-- -14-- -15-- -16-- -17-- -18-- -19-- -20--

SAMPLE NO.	HZN NO.	DEPTH (CM)	HORIZON	(- - -TOTAL - - -)											(- - -CLAY - - -)				(- - -SILT - - -)				(- - -SAND - - -)				(- - -COARSE FRACTIONS(MM) - - -)			
				CLAY	SILT	SAND	FINI	CO3	FINI	COARSI	VI	F	M	C	VC	2	5	20	75	WT	WT	WT	WT							
				.002	.05	.2	.0002	.002	.02	.05	.10	.25	.5	1	2	5	20	75	WT	WT	WT	WT								
				PCT OF <2MM (3A1)											PCT OF <75MM(3B1)				PCT OF <75MM(3B1) SOIL											
853108	1S	0- 11	AP	40.1	22.8	37.1	25.3																							
853109	2S	11- 28	BA	55.0	18.2	26.8	34.9		11.6	11.2	7.9	18.4	10.7	3.1	1.0	--	--	--	--	--	--	29	--							
853110	3S	28- 58	BW1	77.7	9.4	12.9	55.3		9.2	9.0	5.9	11.0	7.6	2.1	0.2	--	--	--	--	--	--	21	--							
853111	4S	58- 83	B1	80.9	8.9	10.2	57.8		4.8	4.6	3.1	5.2	3.4	0.9	0.3	--	--	--	--	--	--	10	--							
853112	5S	83-125	B1	81.5	10.0	8.5	57.0		4.7	4.2	2.5	4.1	2.6	0.7	0.3	--	--	--	--	--	--	8	--							
853113	6S	125-200	BW2	83.0	11.2	5.8	53.2		5.4	4.6	2.1	3.2	2.0	0.7	0.5	1R	1R	--	--	--	--	6	1R							
									7.3	3.9	1.8	2.1	1.3	0.5	0.1	--	--	--	--	--	--	4	--							

SAMPLE NO.	HZN NO.	ORGN TOTAL		EXTR TOTAL		(- - -DISS-CIT - - -)				(RATIO/CLAY)		(ALLERBERG)		(- - -BULK DENSITY - - -)			(- - -WATER CONTENT - - -)			WHOLE SOIL		
		C	N	P	S	FE	AL	MN	CLC	BAR	BAR	FIELD	1/3	OVER	WHOLE	FIELD	1/10	1/3	15			
		6A1C	6B3A	6R3A	6C2B	6G7A	6D2A	8D1	8D1	4I1	4I	4A3A	4A1D	4A1H	4D1	4B4	4B1C	4B7A	4C1	WHOLE SOIL		
		PCT OF <2MM		PCT OF <2MM		PCT OF <2MM		PCT OF <2MM		PCT OF <0.4MM		G/CC			CM/CM			PCT OF <2MM		CM/CM		
853108	1	1.62	0.122			5.5	0.9	0.4	0.26	0.46												
853109	2	1.08	0.092			7.3	1.1	0.3	0.20	0.45					1.31	1.48	0.042			31.2	18.6	0.17
853110	3	0.68	0.085			1.8	1.5	0.1	0.16	0.44					1.08	1.38	0.085			48.9	24.7	0.26
853111	4	0.55				1.9	1.6	0.1	0.16	0.44			73	19	1.08	1.40	0.090			42.4	34.1	0.17
853112	5	0.46				1.9	1.7	0.1	0.17	0.45					1.01	1.35	0.102			50.8	35.5	0.20
853113	6	0.32				2.1	1.7	0.1	0.18	0.45					1.00	1.30	0.102			57.9	36.7	0.21
															0.97	1.35	0.116			62.1	37.2	0.24

*** CONTINUATION ON NEXT PAGE ***

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N S S I.
S U P P L E M E N T A L D A T A S H E E T

MAASIN

S85FN-725-047

SAMPLE NO.	HZN NO.	P RETENT PCT	(ACID-OXALATE EXTRACT)					(- - - - - pH - - - - -)		(WATER CONTENT)		
			OPT DEF	AL	FE	SI	KCl	MOIST H ₂ O	MOIST CaCl ₂ .01M ²	15-BAR MOIST	15-BAR DRY	
			8.0	6G12A	6C9A	6V2	8C1G	1:1		4B2B	4B2A	
				<-----PCT----->					1:2		<-----PCT----->	
85 3108	1	35	0.19	0.28	1.36	0.04	3.9			21.2	18.6	
85 3109	2	32	0.07	0.28	0.63	0.05	3.9			30.8	24.7	
85 3110	3	58	0.05	0.40	0.34	0.08	3.9			43.8	34.1	
85 3111	4	63	0.05	0.42	0.26	0.07	4.0			46.9	35.5	
85 3112	5	64	0.05	0.44	0.24	0.08	4.0			49.5	36.7	
85 3113	6	62	0.03	0.46	0.20	0.08	4.0			51.5	37.2	

1/3

CP85FN154

SAMPLE NO.	HZN NO.	OPTICAL MINERALOGY										X RAY				DTA		TGA ANAL		
		FA 7B1A	RE 7B1A	7B1A	7B1A	7A21	7A21	7A21	7A21	7A21	7A3	7A3	K2O AQ3A	FF 6C7A						
										RELATIVE AMOUNTS				PCT						
BSP3108	1										KK 3	GE 2				KK57			0.1	9.8
BSP3109	2										KK 3	GE 2				KK59			0.1	9.8
BSP3110	3										KK 3	GE 2				KK51			0.1	9.5
BSP3111	4										KK 3	GE 2				KK53			0.1	11.4
BSP3112	5																			
BSP3113	6																			

ANALYSES: SMALL ON SIEVED - 200 BASIS

MINERALOGY: FA = FRACTION ANALYZED RE = RESISTANT

KIND OF MINERAL: GE = GETHITE KK = KAOLINITE

RELATIVE AMOUNT: 6 INDETERMINATE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

MINERALOGY BASED ON SAND/SILT:

MINERALOGY BASED ON CLAY:

FAMILY PLACEMENT:

COMMENTS:

Series: SND

Soil Survey # SH5-FN-725-049

Location: Abuyog Expt. Station, Abuyog, Leyte.

Latitude: 10-59 00-N

Classification:

Physiography: Upland slope in level or undulating uplands

Microrelief:

Slope Characteristics: 8%

Precipitation: 3710 mm Udic moisture regime

Water Table Depth:

Air Temperature: Ann: 29, Sum: 28, Win: 26

Drainage: Well drained

Stoniness:

Described by: M. R. Recel, R. Yeck, R. Badayos, N. Marasigan Jr. Date: 01/85

NSL ID #: 85P0601

Longitude: 011 46-30-E

Elevation: 8 m MSL

Permeability:

All colors and other physical properties were observed at moist condition. 8 months wet and 0 months dry.

A1--0 to 12 cm; dark brown (7.5YR 3/4) clay loam; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine and few fine roots; many fine dendritic tubular and few medium dendritic tubular pores; clear wavy boundary.
About 30% by volume stones greater than three inches in diameter that could interfere with tillage; stones 3 to 5 feet apart on the surface.
85P3120

AB--12 to 32 cm; yellowish brown (10YR 5/6) silty clay loam; moderate fine subangular blocky structure parting to moderate medium and coarse subangular blocky; ; few fine and very few medium roots; many fine dendritic tubular and few medium dendritic tubular pores; clear irregular boundary.
Common vesicular pores; about 40 to 50 percent stones with diameter greater than three inches
85P3121

Bw1--32 to 53 cm; yellowish brown (10YR 5/8) silty clay; moderate medium subangular blocky structure parting to weak medium prismatic; friable, slightly sticky, slightly plastic; few fine roots; common fine and medium dendritic tubular and few fine vesicular pores; clear irregular boundary.
About 50 to 60 percent stones greater than three inches in diameter
85P3122

Bw2--53 to 91 cm; yellowish brown (10YR 5/8) silty clay; moderate fine subangular blocky structure parting to weak medium subangular blocky parting to weak medium prismatic; firm, slightly sticky, slightly plastic; few very fine and fine tubular pores; gradual wavy boundary.
Saprolite pebbles coated with dark gray (7.5YR N/4) "oxides"; about 60 to 70 percent rock fragments greater than three inches in diameter.
85P3123

Bw3--91 to 118 cm; strong brown (7.5YR 5/6) silty clay; moderate fine and medium subangular blocky structure parting to moderate prismatic; friable, slightly sticky, slightly plastic; very few very fine roots; very few very fine tubular pores; clear irregular boundary.
Few fine reddish yellow (7.5YR 7/8) soft concretions; about 60 to 80 percent saprolite.
85P3124

Cr--118 to 136 cm; strong brown (7.5YR 4/6) silty clay; weak to moderate fine prismatic structure.
Few fine reddish yellow specks (7.5YR 6/6) and few fine gray (7.5YR N/6) patches.
85P3125

DEP cm	HORI- ZON	DRY COLOR 1	DRY COLOR 2	MOIST COLOR 1	MOIST COLOR 2	TEXTURE	STRUCTURE	NL #	CONSISTENCE	ROOTS	PH	BU RY
								85F-	D M OTH WET	1 2		
0-12	A1			7.5YR 3/4		CL	2F SBK	3120	FR	SS SP C V1	P 1	CW
12-32	AB			10YR 5/6		SICL	2F SBK->2MCSBK	3121				CI
32-53	Bw1			10YR 5/6		SIC	2F SBK->1M SBK	3122	FR	SS SP P 1	VF2	CI
53-91	Bw2			10YR 5/8		SIC	2F SBK->1M SBK	3123	FI	SS SP		GW
91-118	Bw3			7.5YR 5/6		SIC	2FMSBK->2 PR	3124	FR	SS SP VPF1		CI
118-136	Cr			7.5YR 4/6		SIC	5F PR	3125				

LOW PORES	CONCRETIONS	EFF MOTTLES	COATS ON PED SURFACES	VOLA	CLAY	SOIL
DEP 1 2	1 2	ERV 1	K AC T L HUE	LTTL	PCT	MST
012 TEM 1 TEP 2						
032 TEM 1 TEP 2						
053 TEC 12 VSP 1						
091 TUF 11						
118 TUVFV1						

LOW THICKNESS	ROCK FRAG	3RD DRY	3RD MOIST	FIELD MEAS	3RD	3RD MOTTLE	3RD COAT
DEP AVE MAX MIN	1 2 3	COLOR	COLOR	1 2	STRUC		K AC T L HUE
091						1M PR	

HORIZON # 1 About 30% by volume stones greater than three inches in diameter that could interfere with tillage; stones 3 to 5 feet apart on the surface.

HORIZON # 2 Common vesicular pores; about 40 to 50 percent stones with diameter greater than three inches.

HORIZON # 3 About 50 to 60 percent stones greater than three inches in diameter.

HORIZON # 4 Saprolite pebbles coated with dark gray (7.5YR N/4) "oxides"; about 60 to 70 percent rock fragments greater than three inches in diameter.

HORIZON # 5 Few fine reddish yellow (7.5YR 7/8) soft concretions; about 60 to 80 percent saprolite.

HORIZON # 6 Few fine reddish yellow specks (7.5YR 6/6) and few fine gray (7.5YR N/6) patches.

NOT DESIGNATED

DATE PRINTED 12/20/85

S 85FN-725 -049

PROJECT: PHILIPPINES-FORUM

GENERAL METHODS 1B1A, 2A1, 2B

SAMPLE NO. 85P3120-3125
 PLODOR NO. 85P 603
 PROJECT NO. 85P 111

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 NATIONAL SOIL SURVEY LABORATORY
 LINCOLN, NEBRASKA 68508-3866

		-1--	-2--	-3--	-4--	-5--	-6--	-7--	-8--	-9--	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-	-20-	
SAMPLE NO.	HZN NO.	DEPTH (CM)	HORIZON	(- - -TOTAL - - -)		(- -CLAY- -)		(- -SILT- -)		(- - - - -SAND- - - -)		(- - - - -COARSE FRACTIONS(MM)-)		(->2MM)								
				CLAY	SILT	SAND	FINE	CO3	FINE	COARSE	VF	F	M	C	VC	WEIGHT		WT		PCT OF		WHOLE
				LT	.002	.05	LT	LT	.002	.02	.05	.10	.25	.5	1	2	5	20	.1	1	1	1
				.002	-.05	-.2	.0002	.002	-.02	-.05	-.10	-.25	-.50	-.1	-.2	-.5	-.20	-.75	.75			
				PCT OF <2MM (3A1)										PCT OF <75MM(3B1)		SOIL						
853120	1S	0-12	A1	41.5	33.5	25.0	18.8		24.7	8.8	7.4	11.4	4.4	1.2	0.6	TR	--	--	--	18	TR	
853121	2S	12-32	AB	35.8	36.2	28.0	13.9		26.7	9.5	7.2	10.9	4.9	2.6	2.4	--	--	--	--	21	--	
853122	3S	32-53	BW1	47.8	25.5	26.7	23.4		20.2	5.3	5.0	7.4	3.6	2.5	8.2	TR	2	36	51	38		
853123	4S	53-91	BW2	48.9	24.3	26.8	22.5		19.8	4.5	4.6	6.7	3.7	4.1	7.7	3	4	32	53	39		
853124	5S	91-118	BW2	32.6	21.7	45.7	14.5		17.2	4.5	5.3	9.3	7.3	8.7	15.1	1	1	35	62	37		
853125	6S	118-188	CR	33.3	22.9	43.8	15.1		18.3	4.6	6.5	11.0	8.1	8.0	10.2	1	2	47	69	50		

SAMPLE NO.	HZN NO.	6A1C	TOTAL N	EXTR P	TOTAL S	(- - DITH-CIT - -)(RATIO/CLAY)				(ATTERBERG)		(- BULK DENSITY -)		COLE (- - WATER CONTENT -)		WRD							
						FE	AL	MN	CEC	BAR	15 - LIMITS -	FIELD	1/3	OVEN	WHOLE		FIELD	1/10	1/3	15	WHOLE		
						6R3A	6C2B	6G7A	6D2A	CEC	BAR	LL	PI	MOIST	BAR	DRY	SOIL	MOIST	BAR	BAR	BAR	SOIL	
						PCT OF <2MM				8D1	8D1	4F1	4F	4A3A	4A1D	4A1H	4D1	4B4	4B1C	4B1C	4B2A	4C1	
												PCT <0.4MM		G/CC		CM/CM		PCT OF <2MM		CM/CM			
853120	1	4.19	0.443			4.3	0.7	0.4	0.62	0.61				0.88	1.42	0.173					65.8	25.2	0.36
853121	2	2.10	0.259			5.0	0.8	0.5	0.58	0.69				0.99	1.43	0.130					55.4	24.7	0.30
853122	3	1.00	0.126			6.6	1.0	0.7	0.40	0.57		55	12	0.91	1.30	0.100					64.7	27.4	0.28
853123	4	0.76				6.2	1.0	0.5	0.37	0.56				0.78	1.20	0.123					81.6	27.2	0.36
853124	5	0.38				7.6	1.0	0.3	0.70	0.86		58	12	0.83	1.22	0.111					74.4	28.0	0.33
853125	6	0.30				3.8	0.6	0.2	0.71	0.87				0.76	1.10	0.097					85.5	28.9	0.34

*** CONTINUATION ON NEXT PAGE ***

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DATE PRINTED 12/20/85

NOT DESIGNATED

S 85FN-725 -049

PEDON NO. 85P 603 NATIONAL SOIL SURVEY LABORATORY

SAMPLE NO.	HZN NO.	(- NH4OAC EXTRACTABLE BASES -)					ACIDITY	EXTR AL	(- - - CFC - - -)			AL SAT	-BASE SUM	SAT NH4	CO3 AS <2MM	RES. OHMS /CM	COND. (- - - -PH - - -)			
		CA	MC	NA	K	SUM BASES			AL	SUM	NH4						OAC + AL	MMHOS /CM	KCL IN	CACL2 .01M
853120	1	7.9	4.9	0.1	1.7	14.6	21.5	0.2	36.1	25.7	14.8	1	40	57			4.5	4.8	5.0	
853121	2	4.9	2.9	0.1	0.7	8.6	20.3	1.3	28.9	20.6	9.9	13	30	42			4.2	4.5	4.8	
853122	3	3.8	2.2	0.1	0.4	6.5	18.3	2.2	24.8	18.9	8.7	25	26	34			4.1	4.5	5.2	
853123	4	2.6	1.8	0.2	0.2	4.8	18.5	2.6	23.3	18.3	7.4	35	21	26			4.1	4.5	5.2	
853124	5	2.5	2.5	0.1	0.3	5.4	22.3	6.3	27.7	22.7	11.7	54	19	24			3.9	4.3	5.2	
853125	6	3.2	3.5	0.2	0.4	7.3	19.9	6.5	27.2	23.7	13.8	47	27	31			3.9	4.3	5.3	

SAMPLE NO.	HZN NO.
853120	1
853121	2
853122	3
853123	4
853124	5
853125	6

(- - - - - MINERALOGY - - - - -)
 (- - - - - CLAY - - - - -)
 (- - - - X-RAY - - - -)(- - DIA - -) TOTAL DOM.
 (- - - - <2U - - - -)(- - <2U - -) RLS WEATH
 7A21 7A21 7A21 7A21 7A3 7A3 /B1A 7B1A
 <- RELATIVE AMOUNTS -> <- - - - - PCT - - - ->

KK 3 CR 1 GE 1 KK29
 KK 3 CR 2 GE 1 KK44
 KK 3 CR 2 GE 1 KK49
 KK 3 CR 1 GE 1 KK39

AVERAGES, DEPTH 25-100: PCT CLAY 45 PCT .1-75MM 50

ANALYSES: S= ALL ON SIEVED <2MM BASIS

MINERALOGY: KIND OF MINERAL KK KAOLINITE CR CRISTOBALITE GE GOETHITE

RELATIVE AMOUNT 6 INDETERMINATE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

123

CP85FN154

SAMPLE NO.	MIN NO.	MINERALOGY										X-RAY		DTA		TOT ANAL				
		OPTICAL					SAND/SILT					CLAY				K20	FE			
		FA	RE	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7B1A	7A21	7A21	7A21	7A21	7A21	7A3	7A3	6Q3A	6C7A
85P3120	1																			
85P3121	2																			
85P3122	3																			
85P3123	4																			
85P3124	5																			
85P3125	6																			

ANALYSES: S-ALL ON SIEVED < 2mm BASIS

MINERALOGY: FA = FRACTION ANALYZED RE = RESISTANT

KIND OF MINERAL: CR = CRISTOBALITE GE = GOETHITE KK = KAOLINITE

RELATIVE AMOUNT: 6 INDETERMINATE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

MINERALOGY BASED ON SAND/SILT:

MINERALOGY BASED ON CLAY:

FAMILY PLACEMENT:

COMMENTS:

Series: Dolongan
Soil Survey # S85-FN-725-050
Location: Dolongan, Basey, Samar.
Latitude: 11-20-00-N
Classification: Typic Tropohemist
Physiography:
Microrelief:
Slope Characteristics: 18
Precipitation: 2650 mm Udic moisture regime
Water Table Depth:
Air Temperature: Ann: 27, Sum: 27, Min: 24
Drainage: Somewhat excessively drained
Stoniness:

NSSL ID #: 85P0604

Longitude: 125-03-05-E

Elevation: 60 m MSL

Permeability: Slow

Described by: M. H. Recel, R. Yeck, R. Badayos, N. Marasigan Jr.

Runoff: Very slow
Date: 01/85

Textures are apparent textures. Colors are for moist soil. 7 months wet and 0 months dry.

A--0 to 7 cm; black (2.5YR 2/0) loam; weak to moderate fine granular structure; friable, nonsticky, nonplastic; common fine roots; clear wavy boundary.
85P3126

0a1--7 to 26 cm; unknown texture; moderate fine granular structure; friable, nonsticky, nonplastic; few fine roots; common very fine tubular pores; gradual wavy boundary.
Dark reddish brown (2.5YR 3/4) hemic material mixed with about 20% mineral matter; about 80% highly decomposed organic material interspersed with few, 1 to 3 mm in size fibers.
85P3127

0e--26 to 38 cm; red (2.5YR 4/6) and dark reddish brown (2.5YR 3/4) undecomposed organics and partially decomposed organics; ; clear wavy boundary.
85P3128

20a1--38 to 56 cm; unknown texture; ; gradual smooth boundary.
Weak red (2.5YR 4/2) immediately changing to very dark gray (2.5YR N/3) upon exposure to the atmosphere. At weak red condition the organic material appears intermediately decomposed but when it turns gray, it appears a highly decomposed organic matter;
85P3129

20e1--56 to 90 cm; unknown texture; ; clear smooth boundary.
Dark red (2.5YR 4/6) changing immediately to very dark gray (2.5YR N/3) when exposed to the atmosphere; mainly slightly decomposed and intermediately decomposed organic matter, very few woody fragment that are 20-60 mm in diameter.
85P3130

20E2--90 to 112 cm; unknown texture; ; clear smooth boundary.
Mixed, very dark gray (2.5YR N3/) to gray (2.5YR N5/) partly decomposed hemic material and some mineral materials; few, coarse woody fragment.
85P3131

30e1--112 to 131 cm; unknown texture.
White (7.5YR N5/) turning to light gray (7.5YR N7/) when exposed to the atmosphere; suspectedly to be sulfidic material; composed mainly of mineral material, undecomposed wood fragment and few coarse fibers.
85P3132

DEP cm	HORI- ZON	DRY COLOR		MOIST COLOR		FEATURE	STRUCTURE	M. & 85P-	CONSISTENCE			ROOTS		PH	BU RY
		1	2	1	2				D	H	OTH	WET	1		
0-7	A			2.5YR 2/0		L	5F GR	3126	FR	SO	PO	C	1		
7-26	0a1					U	2P GR	3127	FR	SO	PO	C	1		CW
26-38	0e			2.5YR 4/6	2.5YR 3/4	UDOM		3128		SO	PO	F	1		GW
38-56	20a1					U		3129							CW
56-90	20e1					U		3130							GS
90-112	20E2					U		3131							CS
112-131	30e1					U		3132							CS
LOW PORES		CONCRETIONS		EFF	BOTTLES		COATS ON PED SURFACES			VOLA	CLAY	SOIL			
DEP	1	2	1	2	ERV	1	2	K AC T L HUE		K AC T L HUE	LTTI	PCT	MST		
026	TUC V1														

HORIZON # 2 Dark reddish brown (2.5YR 3/4) hemic material mixed with about 20% mineral matter; about 80% highly decomposed organic material interspersed with few, 1 to 3 mm in size fibers.

HORIZON # 4 Weak red (2.5YR 4/2) immediately changing to very dark gray (2.5YR N/3) upon exposure to the atmosphere. At weak red condition the organic material appears intermediately decomposed but when it turns gray, it appears a highly decomposed organic matter;

HORIZON # 5 Dark red (2.5YR 4/6) changing immediately to very dark gray (2.5YR N/3) when exposed to the atmosphere; mainly slightly decomposed and intermediately decomposed organic matter, very few woody fragment that are 20-60 mm in diameter.

HORIZON # 6 Mixed, very dark gray (2.5YR N3/) to gray (2.5YR N5/) partly decomposed hemic material and some mineral materials - few, coarse woody fragment.

HORIZON # 7 white (7.5YR N8/) turning to light gray (7.5YR N7/) when exposed to the atmosphere; suspectedly to be sulfidic material; composed mainly of mineral material, undecomposed wood fragment and few coarse fibers.

DOLONGAN

DATE PRINTED 12/20/85

S 85FN-725 -050

PROJECT: PHILIPPINES-FORUM

GENERAL METHODS 1B1A, 2A1, 2B

SAMPLE NO. 85P3126-3132
 PEDON NO. 85P 604
 PROJECT NO. 85P 111

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 NATIONAL SOIL SURVEY LABORATORY
 LINCOLN, NEBRASKA 68508-3866

-1-- -2-- -3-- -4-- -5-- -6-- -7-- -8-- -9-- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

SAMPLE NO.	HZN NO.	DEPTH (CM)	HORIZON	TOTAL		CLAY		SILT		SAND		FINE		COARSE		SAND		COARSE FRACTIONS (MM)		>2MM		
				CLAY	SILT	LT	LT	LT	LT	VF	F	M	C	VC	2	5	20	75	WT	WT	PCT OF	PCT OF
853126	1S	0-7	A	51.1	29.3	19.6																
853127	2S	7-26	8W							25.0	4.3	2.0	2.1	3.0	4.9	7.6						
853128	3S	26-38	0E																		18	TR
853129	4S	38-56	20A																			
853130	5S	56-90	20E1																			
853131	6S	90-112	20E2																			
853132	7S	112-131	3C																			

SAMPLE NO.	HZN NO.	ORGN TOTAL		EXTR TOTAL	DITH-CIT				RATIO/CLAY		ATTERBERG		BULK DENSITY		COLE		WATER CONTENT				WRD
		C	N		FE	AL	MN	CEC	BAR	LL	PI	FIELD	1/3	OVEN	WHOLE	FIELD	1/10	1/3	15	WHOLE	
853126	1	9.09	1.155						1.64	0.60											30.9
853127	2	9.55	1.261																		44.5
853128	3	21.8												0.46	1.11	0.341					44.5
853129	4	23.9												0.16	0.80	0.710					64.6
853130	5	18.5												0.20	1.05	0.738					67.6
853131	6	22.4												0.66	0.71	0.025					61.6
853132	7	1.37																			60.0
																					15.3

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DATE PRINTED 12/20/85

DOLONGAN

S 85FN-725 -050

PEDON NO. 85P 604 NATIONAL SOIL SURVEY LABORATORY

SAMPLE NO.	HZN NO.	EXTRACTABLE BASE(S)				ACID-SUM	EXTR		CEC		AL-SAT	-BASE-SUM	SAT-NH4	CO3-CACO3	AS-RES.	COND. MMHOS /CM	-PH-	
		CA	MG	NA	K		11Y	AL	SUM	NH4-OAC							+ Al	CAC12
853126	1	2.3	5.9	0.1	0.3	15.6	48.3	14.5	63.9	83.8	30.1	48	24	19			4.0	4.2
853127	2	17.8	11.1	0.1	0.2	29.2	46.0	4.9	75.2	91.9	34.1	14	39	32			4.4	4.8
853128	3	34.0	21.8	0.3	0.1	56.2	75.3	1.7	131.5	134.0	57.9	3	43	42			4.3	4.7
853129	4	30.7	24.6	0.3	0.1	55.1	59.1	1.4	114.2	133.3	56.5	2	48	41			4.3	4.4
853130	5	35.3	36.7	0.5	0.1	72.6	53.5	0.1	126.1	119.8	72.7	TR	58	61			5.0	5.0
853131	6	25.5	25.2	0.5	--	51.2	51.2	0.2	102.4	70.1	51.4	TR	50	73			4.9	5.0
853132	7	7.0	10.9	0.2	TR	18.1	7.2		25.3	18.9			72	96			5.7	6.3

ANALYSES: S+ ALL ON SIEVED <2MM BASIS

N S S L
S U P P L E M E N T A L D A T A S H E E T

DOLONGAN

S85FN-725-050

SAMPLE NO.	HZN NO.	(-----STATE OF DECOMPOSITION-----)				PYROPHOSPHT SOLUBILITY	pH CAC1 .01M 8C1E
		MINL CONT 8F	(FIBER VOL) UNRB 8G	RUB 8G	<-----PCT----->		
85 3126	1						
85 3127	2						
85 3128	3	31	84	44			
85 3129	4	34	90	52	10YR 4/4	4.1	
85 3130	5	32	90	60	10YR 5/3	4.1	
85 3131	6	46	92	56	10YR 5/3 7.5YR 6/?	4.7 4.7	

NOTE: Analyses on air dry < 2 mm prepared sample.

147

Series: Catbalogan
Soil Survey # S85-FN-725-046

NRSL ID #: 85P0600

Location: Santa Rita, Samar, (within the compound of an army camp.)

Latitude: 11-29-00-N

Longitude: 125-00-00-E

Classification:

Physiography:

Microrelief:

Slope Characteristics:

Precipitation: 3550 mm Udic moisture regime

Elevation: 45 m MSL

Water Table Depth:

Drainage: Excessively drained

Permeability: Slow

Stoniness:

Parent Material: unconsolidated sediments from sandstone-shale material

Described by: c.R. Racel, R. Yeck, R. Badayos, N. Marasigan Jr. Date: 01/85

All colors identified when moist. There was slight rain showers at the time of sampling and description.
7 months wet and 0 months dry.

Ap--0 to 10 cm; dark yellowish brown (10YR 4/6) and yellow (10YR 7/8) silt loam; moderate fine and medium subangular blocky structure; firm, slightly sticky, slightly plastic; common very fine and fine and few medium roots; few very fine vesicular pores; strongly acid; clear wavy boundary.
85P3103

B--10 to 28 cm; yellow (10YR 7/8) silty clay loam; moderate medium and coarse subangular blocky structure; firm, sticky, plastic; common very fine and few fine roots; few fine tubular pores; strongly acid; gradual smooth boundary.
85P3104

BC--28 to 48 cm; light brownish gray (10YR 6/2) silty clay; weak medium and coarse platy structure; slightly sticky, slightly plastic; very few very fine roots; few fine tubular and very few medium tubular pores; clear wavy boundary. Thick clay films between horizontally oriented "plates"; earthworm found within the clay deposits; roots following the clay deposits between the "plates", few very fine root pores.
85P3105

C--48 to 67 cm; light gray (7.5YR 7/0) and strong brown (7.5YR 5/8) clay; firm, sticky, plastic; clear smooth boundary. Thick clay films between stratified plates that are lined with Mn oxides and prominent horizontal plates of consolidated materials; many slightly highly weathered rocks.
85P3106

Cr--67 to 110 cm; weathered bedrock.
Slightly to highly weathered rock fragment retaining original rock structure.
85P3107

DEP CM	HORIZON ZON	DRY COLOR 1	DRY COLOR 2	MOIST. COLOR 1	MOIST. COLOR 2	TEXTURE	STRUCTURE	NO. OF ROOTS	CONSISTENCE D M CTH WET	ROOTS 1 2	PH	BU RY	
0-10	Ap												
10-28	B			10YR 4/6	10YR 7/8	SIL	2FMSBK	3103	FI				
28-48	BC			10YR 7/6		SICL	2MCSBK	3104	FI	SS SP C 11 F 2	5.3	CW	
48-67	C			10YR 6/2		SIC	1MCPL	3105		S P C VI F 1	5.3	GS	
67-110	Cr			7.5YR 7/0	7.5YR 5/8	C WB		3106	FI	SS SP VPVI		CW	
								3107		S P		CS	
LOW PORES		CONCRETIONS		EFF. ROOTLES			COATS ON PED SURFACES						
DEP 1 2		1 2		ERV 1			K AC T L HUE		K AC T L HUE		VOLA LTTL	CLAY PCT	SOIL MST
010	VSP V1												
028	TUP 1												
048	TUP 1 TUP2												

HORIZON # 3 Thick clay films between horizontally oriented "plates"; earthworm found within the clay deposits; roots following the clay deposits between the "plates", few very fine root pores.

HORIZON # 4 Thick clay films between stratified plates that are lined with Mn oxides and prominent horizontal plates of consolidated materials; many slightly highly weathered rocks.

HORIZON # 5 Slightly to highly weathered rock fragment retaining original rock structure.

CATBALOGAN

DATE PRINTED 12/20/85

S 85FN-725 -046

PROJECT: PHILIPPINES-FORUM

GENERAL METHODS 1B1A, 2A1, 2B

SAMPLE NO. 85P3107-3107
 PIDON NO. 85P 600
 PROJECT NO. 85P 111

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 NATIONAL SOIL SURVEY LABORATORY
 LINCOLN, NEBRASKA 68508-3866

				-1--	-2--	-3--	-4--	-5--	-6--	-7--	-8--	-9--	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-	-20-	
SAMPLE NO.	HZN NO.	DEPTH (CM)	HORIZON	(- - -TOTAL - - -)			(- - -CLAY- - -)			(- - -SILT- - -)			(- - -SAND- - -)			(- - -COARSE FRACTIONS(MM)- - -)			(>2MM)					
				CLAY LT	SILT .002	SAND .05	FINE LT	CO3 LT	FINE .002	COARSE .02	VF .05	F .10	M .25	C .5	VC 1	WEIGHT			PCT OF					
				PCT OF <2MM			(3A1)			PCT OF <75MM(3B1)			PCT OF <75MM(3B1)			PCT OF WHOLE SOIL								
853103	1S	0- 10	AP	31.8	49.8	18.4	10.9			27.4	22.4	10.8	4.5	1.6	0.9	0.6	--	--	--	--	--	--	--	
853104	2S	10- 28	BW	26.5	50.6	22.9	7.4			30.7	19.9	12.5	5.4	2.3	1.6	1.1	--	--	--	--	--	8	--	
853105	3S	28- 48	BC	19.5	52.5	28.0	4.5			31.6	20.9	15.2	7.6	2.6	1.8	0.8	--	--	--	--	--	10	--	
853106	4S	48- 67	C	15.9	59.7	24.4	3.3			34.3	25.4	16.7	6.2	1.0	0.3	0.2	--	--	--	--	--	13	--	
853107	5S	67-110	CR	11.2	57.0	31.8	1.8			32.5	24.5	19.0	8.5	2.4	1.3	0.6	2	--	--	--	--	8	--	
																2			15			?		

SAMPLE NO.	HZN NO.	TOTAL C	EXTR TOTAL N	DITH-CIT P	EXTRACTABLE S				CEC 8D1	15 BAR 8D1	LIMITS		BULK DENSITY			COLE			WATER CONTENT				WRD WHOLE SOIL	
					FE 6C2B	AL 6C7A	MN 6D2A	CEC 8D1			LL 4F1	PI 4F	FIELD 4A3A	1/3 BAR 4A1D	OVEN DRY SOIL 4A1H	WHOLE SOIL 4D1	FIELD 4B4	1/10 BAR 4B1C	1/3 BAR 4B1C	15 BAR 4B2A				
853103	1	1.78	0.163		3.3	0.4	0.1	1.03	0.63			1.11	1.38	0.075										
853104	2	0.66	0.085		3.6	0.5	0.1	1.54	0.84			1.13	1.39	0.071							42.4	20.0	0.25	
853105	3	0.29			3.3	0.4	0.1	2.51	1.13			1.17	1.51	0.089							44.5	22.2	0.25	
853106	4	0.22			2.7	1.7	0.1	3.16	1.33		57	16	1.17	1.51	0.089						43.5	22.0	0.25	
853107	5	0.13			2.5	0.2	0.1	4.38	1.69		49	17	1.26	1.67	0.098						38.5	21.1	0.22	

*** CONTINUATION ON NEXT PAGE ***

CP83FN154

SAMPLE NO.	HZN NO.	MINERALOGY										X-RAY					DTA		TOT ANAL		
		SAND/SILT										CLAY							K2O	FE	
		FA	RE	7B1A	7A2I	7A2I	7A2I	7A2I	7A2I	7A3	7A3	603A	607A								
		PCT										RELATIVE AMOUNTS					PCT				
85P3103	1																				
85P3104	2	COSI	79	RA50	QZ17	FK14	PO 4	EP 3	AM 2	FP 1	GS 1	MT 3	VR 2	KK 2	LE 1	GE 1	KK 3		0.9	7.4	
85P3105	3											MT 3	VR 2	KK 1				KK 3		0.9	7.0
85P3106	4	COSI	82	RA71	QZ10	FK 9	AM 4	EP 3	FP 1	OP 1	BT 1	CB 1	MT 3	VR 2	KK 1			KK 1		0.9	6.0
85P3107	5											MT 4	VR 2	KK 1				KK 1		1.1	8.0

ANALYSES: S-ALL ON SIEVED < 2mm BASIS

MINERALOGY: FA = FRACTION ANALYZED RE = RESISTANT

KIND OF MINERAL: GE = GOETHITE LE = LEPIDOCROCITE PO = PLANT OPAL QZ = QUARTZ RA = RESISTANT AGGREGATES AM = AMPHIBOLE

EP = EPIDOTE FK = POTASSIUM FELDSPAR FP = PLAGIOCLASE FELDSPAR GS = GLASS MT = MONTMORILLONITE

VR = VERMICULITE KK = KAOLINITE OP = OPAQUES BT = BIOTITE CB = CARBONATE AGGREGATES

RELATIVE AMOUNT: 6 INDETERMINATE 3 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

MINERALOGY BASED ON SAND/SILT:

MINERALOGY BASED ON CLAY:

FAMILY PLACEMENT:

COMMENTS:

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Similar to the Eastern Visayas, particularly Eastern and Northern Samar, the Bicol Region is a part of the general area which normally get the first impact of many typhoons.

Rice is the staple crop of the region and is grown on both irrigated and unirrigated wetland and upland areas. Coconut and abaca are the export crops. Sugarcane is limited in the area of the Bicol Sugar Development Company in Camarines Sur. Just like in many areas of the country, forest exploitation has caused denudation of the mountains. Inundation of the Bicol River Basin, the main rice producing area of the region is almost an annual occurrence. The absence of or the occurrence of very short dry seasons favors the availability of irrigation for the crops during the drier part of the year when typhoon rarely cause crop destruction. Bi-weekly or monthly planting of rice (a modified rice gardening system) helps spread out the risks from typhoon winds. It is rapidly getting acceptance among the farmers. The Bicol River Basin Development Project (BRBDP) started in the middle of the 70's has helped tremendously in reducing flood damages by shortening the duration of inundation, development of irrigation systems and farm to market roads. The BRBDP which has emphasis in the lower areas of the basin is now being complemented by the RRDP in the upland and hillyland areas.

135

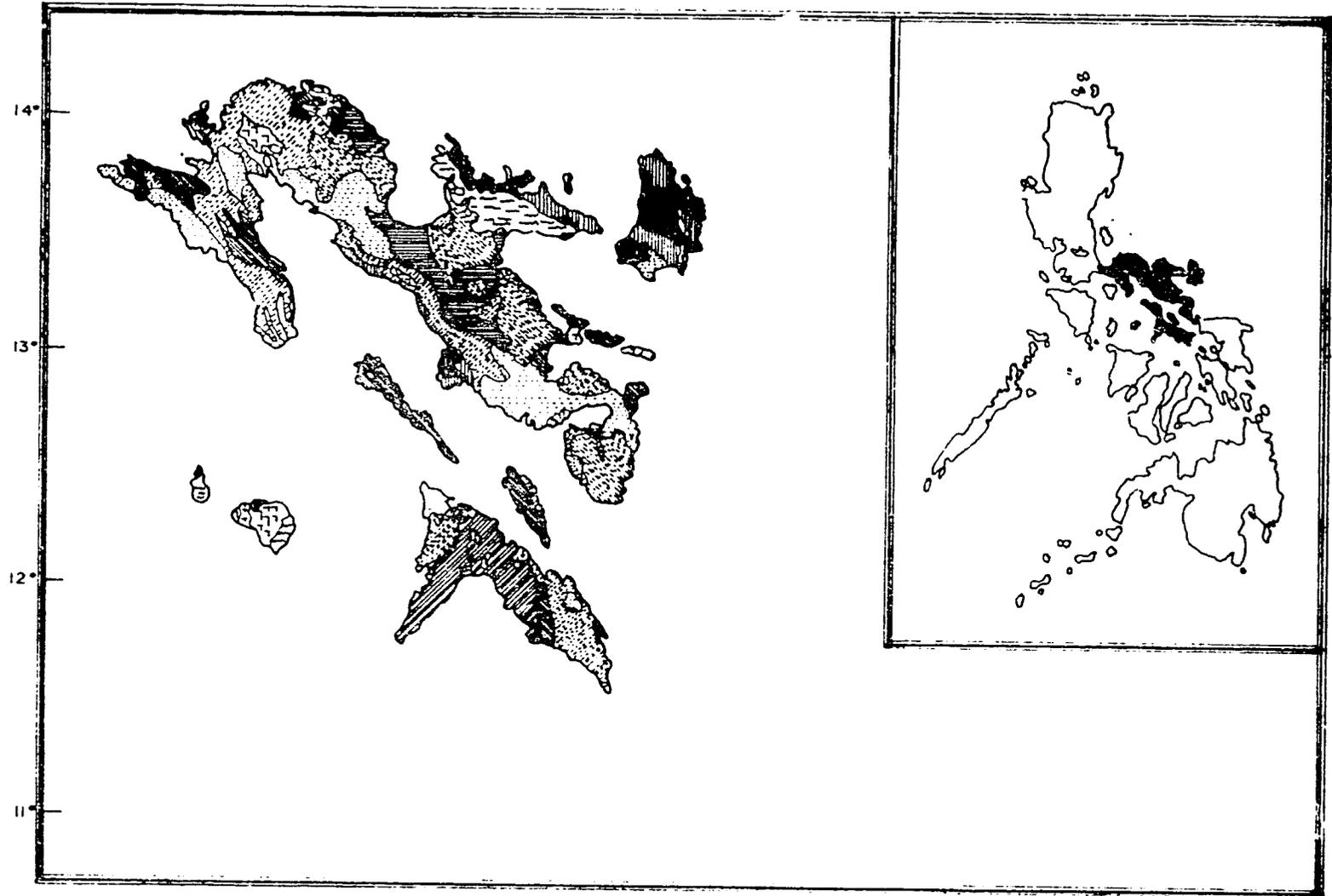


Figure 15. Geologic map of the Bicol Region.



Figure 16. Soils map of the Bicol Region, Region V, Philippines, showing also the locations of the pedon sites and rainfall stations.

Soil Map of Region V (Camarines Norte, Camarines Sur, Albay and Sorsogon)

Legend:

1 - Hydrosol	232 - Malinao fSL
5 - Quingua SiL	233 - Libon SiC
45 - Mountain Soils, Undiff.	234 - Ligao CL
82 - San Manuel SiL	235 - Baccaran C
98 - Annam CL	239 - Luisiana C
118 - Beach Sand	241 - Mauraro SL (Gr)
122 - Umingan fSL	242 - Mayon SL
126 - Alimodian CL	243 - Guinobatan SL
132 - Faraon C	244 - Castilla CL
140 - Luisiana CL	245 - Bonsel SC
153 - Bolinao C	246 - Casiguran CL
172 - Ubay CL	247 - Macabare SL
174 - Sevilla C	249 - Bulusan L
181 - Antipolo-Alimodian- Luisiana Complex	249 - Sorsogon SL
182 - Pili CL	250 - Sorsogon SiCL
193 - Pili C	252 - Silay fSL
194 - Pili L	273 - Irosin SL
185 - Bolongan C	274 - Macabare SCL
186 - Tigaon C	275 - Bulusan SL
187 - Macoled-Pili Complex	277 - Irosin SiL
188 - Macoled SL	341 - Lava Flow
189 - Indian SiL	342 - Castilla-Bolinao Complex
190 - San Manuel L	350 - Baccaran SC
227 - Legaspi fSL	251 - Baccaran SL
230 - Legaspi fSL (Sty)	407 - Alaminos CL
232 - Legaspi SCL	455 - Panganiran C

INFORMATION ON SPECIFIC TOUR ROUTE AND STOPS

The Bicol Region:

Three pedons are scheduled to be visited in the Bicol Region after the long bus ride from Tacloban, crossing the San Bernardino Strait by ferry, to Casiguran Sorsogon. The Bicol Region in general is hilly to mountainous with small coastal lowlands and inland valley plains except in the broad lowlands of the Bicol River Basin mainly in Camarines Sur and in a small part of Albay provinces. Similar to the Eastern Visayas the Bicol Peninsula is also subject to frequent and devastating typhoons.

Coconut is noticeably the common crop in the upland areas. Abaca or Manila hemp and perennial tree crops, notably the pili nut trees and other fruit trees are grown mainly as intercrop in coconuts and in secondary forest areas. Rice is grown mainly in irrigated as well as rainfed wetland of the plains and in much lesser extent as an upland crop on the volcanic hillsides.

Sorsogon series (Pedon 15) is typically on narrow coastal plains of Sorsogon Bay which actually is a marine gulf, which has more serene or less turbulent waves and consequently the plains which in the past are marshes and mangroves are of fine sediments. The favorable rainfall distribution almost always assure the availability of supplementary irrigation for the year round rice production which is also made possible by the adoption of non photo-periodic modern rice varieties. The pedon was characterized as an INSFER site in connection

with the International Wetland Soils Workshop in the International Rice Research Institute which was the second stage in the VIIth International Forum on Soil Taxonomy and Agrrotechnology Transfer held in 1984.

The tour proceed to Pilar, Sorsogon to Pedon 15 (SND). This pedon is an extragrade of the Castilla series which was characterized as one of the sites of the Benchmark Soil Project in the Philippines. Unlike the typical Castilla series which is a shallow to moderately deep soil on top of light colored marine sediments, this pedon represents a deep highly weathered volcanic ash material with basaltic boulder out crops in some sections occur on the higher, more hilly to mountain landforms. The area covered by this soil is observed to be quite extensively in Sorsogon and could also be of considerable extent as inclusions of the Castilla series as mapped in Misamis Occidental, Quezon and Zamboanga provinces. The soil is primarily on coconuts with perennial tree intercrops. Open spaces are cultivated to rice, cassava, and rarely to corn. Phosphorus response is obtain in corn and legumes in the presence of adequate nitrogen. Potassium is marginal and lime is beneficial but overliming may easily occur at higher rates. Optimum economic yields of corn are obtainable at rates of 80-40-30 per hectare of NPK.

On a clear day the route from Pedon 16 towards Naga City offers majestic views of the Mayon Volcano at several angles but which because of the almost perfect symmetry of the cone seem to be from only one direction. Traces of the destruction of crop crops and properties caused by the mudflows (saturated volcanic ash moving down the slopes) in 1984 may still be observable at some points along the route.

The varying land uses along the route also provide insights to the relation of land uses to the land forms and consequently to the soils.

Pedon 17 (Isarog series) is accessible for a feeder road from Naga City. The pedon is at about 350 meters elevation on the interfluve

shoulders of Mt. Isarog, one of the dormant volcanic peaks in the Bicol Region. Coconut bear better at the lower slopes than on the upper slopes, some are monocrop and other are intercropped by either perennials or cultivated annual crop including sugarcane. Wetland rice field are found even at slightly higher elevation where topography permits terraced rice paddies and where adequate and continuous irrigation is available.

For most upland grain crops corn and rice, adding P only on more recently deforested area assures reasonable yields of 3 to 4 tons corn and 2 to 3 tons rice per hectare. Nitrogen alone produce zero yields of corn. Despite the low acidic reaction of soil pH 4.8 to 5.2, there is no response to lime nor to K addition even after 5 or 6 continuous croppings and fertilization on the same field. Cabbages and other leafy vegetables, carrots and white potatoes can develop good stand. Only the quality of potato is affected by the presence of nematodes which also affect some sugarcane fields.

Hopefully, all the participants enjoy and profit from long and gruelling field tour of the Forum. It is foreseen that those who can keep their eyes open for most parts of the bus ride can profit most from observation because not all interesting and education aspect can be written down.

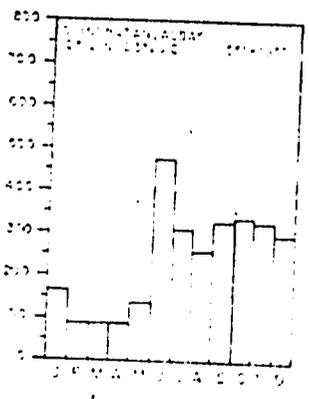
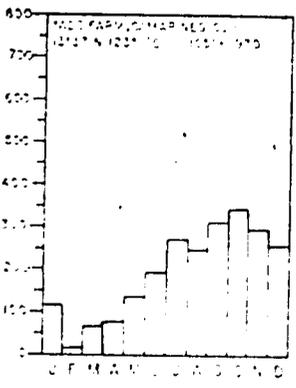
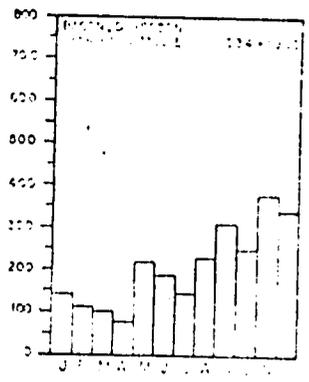
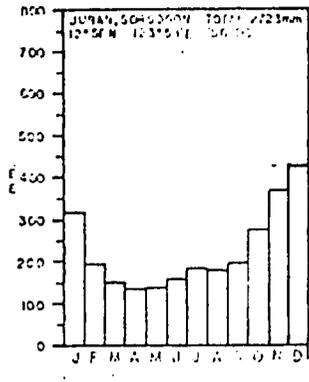


Figure 17a. Rainfall pattern in the Bicol Region.

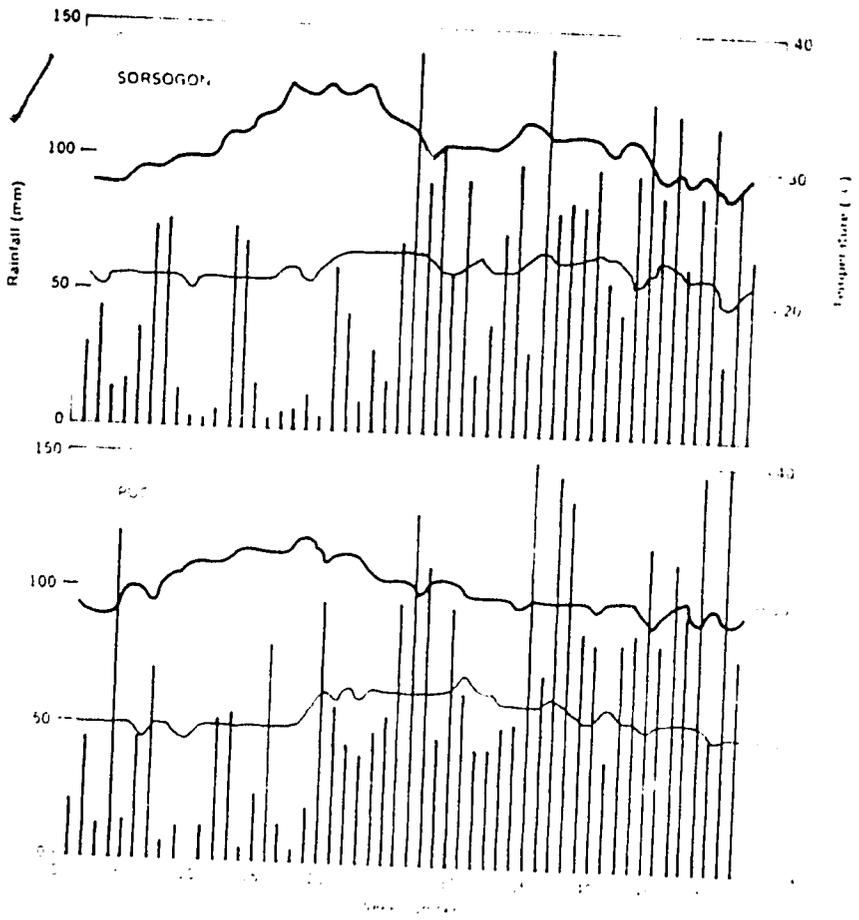


Figure 17b. Rainfall pattern in Benchmark Sites.

SERIES: Sorsogon

NSSL ID #: 84P0069

SOIL SURVEY # S83FN-725-018

LOCATION: Near Casiguran, Sorsogon.

LATITUDE: 12°45'N

LONGITUDE: 123°55'E

PHYSIOGRAPHY: Terrace

SLOPE CHARACTERISTICS: < 1 %

ELEVATION: a MSL

PRECIPITATION: 7-9 wet months

WATER TABLE DEPTH (cm): Flooded

DRAINAGE: Very poorly drained

PERMEABILITY: Very slow

STONINESS: None

EROSION OR DEPOSITION: None

PARENT MATERIAL: Alluvium

CLASSIFICATION: Very-fine, montmorillonitic, non-acid, isohyperthermic, Tropic Fluvaquent

DIAGNOSTIC HORIZONS: Ochric Cambic

FAMILY CONTROL SECTION: 025 to 100

DESCRIBED BY: A. Dayot; A. Marqueses; R. Haberman; R. Yeck. SAMPLE DATE: 09/83

Vegetation-Sedges; firm Bristy Lis; Horalis; unknown broad leaf plant; formerly a tidal marsh.

Apl--0 to 9 cm; light brownish gray (2.5Y 6/2), silty clay; few fine prominent yellowish red (5YR 5/6) mottles; massive; very sticky, very plastic; many very fine and common fine roots; neutral; clear wavy boundary.
84P0318

Ap2--9 to 13 cm; light brownish gray (2.5Y 6/2), silty clay; few fine prominent yellowish red (5YR 5/6) mottles; strong medium angular blocky structure; very sticky, very plastic; common very fine roots; slightly acid; clear wavy boundary.
84P0319

Ba9--13 to 26 cm; gray (5Y 5/1), silty clay; many fine and common medium prominent yellowish red (5YR 5/8) mottles making up about 40 percent of the horizon; moderate medium angular blocky structure; very sticky, very plastic; common very fine roots; few very fine tubular pores; neutral; gradual smooth boundary.
84P0320

Bg1--26 to 48 cm; gray (5Y 6/1), silty clay; few to common fine prominent yellowish red (5YR 5/8) mottles; weak coarse prismatic parting to moderate medium angular blocky structure; very sticky, very plastic; few very dark gray (2.5Y 3/0) coatings in root channels; few very fine roots; common very fine tubular pores; many decaying roots (twigs); neutral; gradual wavy boundary.
84P0321

Bg2--48 to 68 cm; gray (5Y 6/1), silty clay; few to common fine prominent yellowish red (5YR 5/8) mottles; moderate medium angular blocky structure; very sticky, very plastic; few very dark gray (2.5Y 3/0) coatings in root channels; few very dark gray (2.5Y 3/0) coatings on ped faces; few very fine tubular pores; many decaying roots (twigs) but less than in Bg1; few areas of black material 5 to 10 mm wide and 2 to 3 cm long; neutral; gradual wavy boundary.
84P0322

BC9--68 to 93 cm; light olive gray (5Y 6/2), silty clay; few fine prominent dark brown (7.5YR 4/4) and common fine prominent yellowish red (5YR 5/6) mottles; moderate medium angular blocky structure; very sticky, plastic; few fine to medium very dark gray (2.5Y 3/0) coatings on faces of peds; few very fine tubular pores; common fragments of decaying roots centers of which are filled with soil; roots range up to 3 cm in diameter; neutral; gradual wavy boundary.
84P0323

Cg1--93 to 105 cm; light gray to gray (5Y 6/1), light olive gray (5Y 6/2), and dark gray (2.5Y 4/0), silty clay; very few fine prominent brown (7.5YR 4/4) mottles; weak medium subangular blocky structure; very sticky, plastic; few thin light gray (5Y 6/1) clay flows in root channels and/or pores; few very fine tubular pores; less than 5 percent decaying roots; moderately alkaline; gradual wavy boundary.
84P0324

Cg2--105 to 125 cm; very dark grayish brown (10YR 3/2) and grayish brown (10YR 5/2), clay; massive; very sticky, plastic; few black (10YR 2/1) coatings on ped faces; few strong brown (7.5YR 5/6) coatings in pores; few to common very fine tubular pores; rock fragments, 02 & greater than 2 mm and less than 2.5 cm in size from mixed lithology; moderately alkaline.
84P0325

SND

S 83FW-725 -010

DATE 06/29/84

FEDOR NO. 84F 69

PAGE 2 OF 4 PAGES

NATIONAL SOIL SURVEY LABORATORY

SAMPLE NO.	HZN NO.	(- NH4OAC EXTRACTION BASES -)					ACIDITY	(- CEC -)		EXCH NA	SAR	BASE SATURATION		CARBONATE AS CaCO3		CASO4 AS GYPSUM		(- pH -)	
		5B5A	5B5A	5B5A	5B5A	SUM BASES		SUM CATS	NH4-OAC			5C3	5C1	<2MM	<20MM	<2MM	<20MM	PASTE	1:2
84 318	1	22.6	5.6	0.5	0.3	29.0	6.9	35.9	35.5			81	82						
84 319	2	23.8	5.6	0.5	0.4	30.3	7.7	38.0	33.5			80	90					5.0	5.2
84 320	3	23.6	5.6	0.5	0.4	30.3	9.8	40.1	32.7			76	93					5.5	5.6
84 321	4	32.4	7.6	0.7	0.5	41.2	7.2	48.4	43.4			85	95					5.6	5.8
84 322	5	35.5	8.4	0.6	0.6	45.1	7.0	52.1	47.5			87	95					6.1	6.1
84 323	6	35.9	8.8	0.8	0.6	46.1	5.0	51.1	47.4			90	97					6.1	6.3
84 324	7	30.3	7.2	0.9	0.5	38.9	6.0	44.9	38.4			87	100					6.1	6.3
84 325	8	20.5	4.8	0.7	0.2	26.2	7.2	33.4	25.8	2	1	78	100					6.5	6.6

SAMPLE NO.	HZN NO.	(- WATER EXTRACTED FROM SATURATED PASTE -)										TOTAL SALTS	ELEC. COND.	(- MINERALOGY -)											
		CA	MG	NA	K	CO3	HCO3	CL	SO4	NO3	H2O			BA3A	BD5	MMHOS / CM	7A21	7A21	7A21	7A21	7A3	7A3	7B1A	7B1A	
84 318	1																								
84 319	2																								
84 320	3																								
84 321	4																								
84 322	5																								
84 323	6																								
84 324	7																								
84 325	8	2.7	0.8	1.8	0.1		0.4	0.3	4.6		70.0	TR	0.57	MT 5	KK 3										

FAMILY CONTROL SECTION: DEPTH 25-100 PCT CLAY 61 PCT 1-75MM 2

MMHOS/CM OF 1:2 WATER EXTRACT (81) FOR LAYERS 1, 2, 3, 4, 5, 6, 7,

ANALYSES: S= ALL ON SIEVED <2MM BASIS

MINERALOGY: KIND OF MINERAL MT MONTMORILL KK KAOLINITE MI MICA QZ QUANTZ LE LEPIDOCROCIT
 RELATIVE AMOUNT 6 INDETERMINATE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

147

N S S L

S U P P L E M E N T A L D A T A S H E E T - C H E M I C A L

SAMPLE NO.	HZN NO.	P RETENT *	(-- ACID OXALATE --) EXTRACTABLE			(-- Na PYRO --) EXTRACTABLE		(-- pH --)				
			Al *	Si *	Fe *	Fe 6C5a	Al 6G5a	NaF 8C1d	KCl 8C1g	CaCl ₂ MOIST 8C1f	H ₂ O MOIST 8C1f	
			--PCT OF <2MM--			-- -->						
840318	1	32	0.2	<0.1	0.6							
840319	2	28	0.2	0.1	0.7	0.16	0.06	8.2	4.1			
840320	3	25	0.2	0.1	0.6	0.05	0.05	8.7	4.6			
840321	4	33	0.2	0.1	0.9	0.05	0.05	8.9	4.6			
840322	5	32	0.2	0.1	0.8			9.1	5.0			
840323	6	30	0.2	0.1	0.6	0.05	0.04	9.1	5.0			
840324	7	20	0.2	0.1	0.1			9.0	5.0			
840325	8	17	0.1	<0.1	<0.1		0.05	9.1	5.5			
								8.7	5.2			

* New Zealand Procedure

1947 4 06 4 17021

CPB4FNQ22

SAMPLE NO.	HZN NO.	MINERALOGY										X RAY				C-PTA		C-PTA ANAL			
		OPTICAL SAND/SILT					CLAY					7A21	7A21	7A21	7A21	7A21	7A3	7A3	PCT	PCT	
		FA	RE	7B1A	7A21	7A21	7A21	7A21	7A21	7A3	7A3	PCT	PCT								
84P 318	1												MI 5	KK 3	MI 1	QZ 1					
84P 319	2	CS1	12	OT74	GS14	PO12							MI 5	KK 3	LE 2	MI 1	QZ 1	KK12		0.4	4.7
84P 320	3												MI 4	KK 3	LE 1	QZ 1		KK10		0.4	5.9
84P 321	4	CS1	9	OT83	PO 9	GS 8							MI 5	KK 3	QZ 1			KK12		0.4	5.9
84P 322	5																				
84P 323	6																				
84P 324	7												MI 5	KK 4				KK41		0.4	4.3
84P 325	8																				

ANALYSES: SHALL ON SIEVED < 2mm BASIS

MINERALOGY: FA = FRACTION ANALYZED RE = RESISTANT

KIND OF MINERAL: QZ = QUARTZ MI = MICA HT = HORNBLLENITE KK = KALINITE LE = LEPIDOCROLITE PO = PLAIN POW

GS = GLASS OT = OTHER

RELATIVE AMOUNT: 6 INDETERMINATE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

MINERALOGY BASED ON SAND/SILT:

MINERALOGY BASED ON CLAY:

FAMILY PLACEMENT:

149

Series: SND

Pedon No: 582FN-725-002

Taxonomy:

Latitude: 13° 37' N Longitude: 123° 36' E

Location: 25 km S of Legazpi, near Pilar village, Sorsogon Province, Del Rosario farm.

Physiography: Upland ridge in level to undulating uplands

Geomorphic Position: On lower third interfluvial shoulder

Slope and Aspect: 9 pct SE convex

Elevation: 80 m M.S.L

Precipitation: Udic moisture regime.

Water Table: Not observed

Drainage: Moderately well drained

Permeability: Moderately slow

Land Use: Cropland

Parent Material: strongly weathered, ash or ejecta

Described by: C. Alcade, M. Raymunde, P. Vicente, M. Mausbach

A 0 - 12 cm Dark brown (7.5YR 3/2) light clay, brown to dark brown (7.5YR 4/4, dry); moderate medium subangular blocky parting to weak fine subangular blocky structure; hard, firm, sticky; plastic; many very fine to fine roots; clear smooth boundary.
82P2056

BA 12 - 30 cm Brown to dark brown (7.5YR 4/4) clay; moderate medium to coarse subangular blocky structure; firm, sticky; plastic; a few thin patchy clay films on faces of peds; common very fine to fine roots; common medium worm casts; clear wavy boundary.
82P2061

Bt1 30 - 55 cm Brown to dark brown (7.5YR 4/4) clay; moderate coarse angular blocky parting to moderate medium angular blocky structure; firm, sticky; plastic; a few thin patchy clay films on faces of peds; a few fine roots; clear wavy boundary.
82P2062

Bt2 55 - 75 cm Brown to dark brown (7.5YR 4/4) clay; a few fine distinct red (2.5YR 4/6) mottles; moderate medium angular blocky structure; firm, sticky; plastic; a few thin patchy clay films on faces of peds; a few fine roots; many medium rounded iron-manganese concretions; clear wavy boundary.
82P2063

Bt3 75 - 100 cm Yellowish red (5YR 4/6) clay; common fine distinct red (2.5YR 4/6) mottles; moderate medium angular blocky structure; firm, sticky; plastic; a few thin patchy clay films on faces of peds; common rounded iron-manganese concretions and a few fine rounded iron concretions; gradual wavy boundary.
82P2064

BC1 100 - 160 cm Yellowish red (5YR 4/6) clay; common medium distinct brown (7.5YR 5/4) mottles; weak medium angular blocky structure; firm, sticky; plastic; a few thin patchy clay films on faces of peds; rock fragments, 4 pct larger than 2 mm mixed lithology; a few medium rounded iron-manganese concretions and common medium rounded iron concretions; gradual wavy boundary.
82P2065

BC2 160 - 195 cm Red (2.5YR 4/6) clay; common medium distinct brown (7.5YR 5/4) mottles; weak medium angular blocky structure; firm, sticky; plastic; a few thin patchy clay films on faces of peds; common medium rounded iron concretions.
82P2066

NOT DESIGNATED

CLASSIFICATION:

S 82FN-725 -002

PROJECT: PHILIPPINES

GENERAL METHODS 1B1A, 2A1, 2B

DATE PRINTED 01/14/86

PAGE 1 OF 2 PAGES

SAMPLE NO. 82P2080-2086
 PEDON NO. 82P 402
 PROJECT NO. 82P 72

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 NATIONAL SOIL SURVEY LABORATORY
 LINCOLN, NEBRASKA 68508-3866

SAMPLE NO.	HZN NO.	DLPIN [CM]	HORIZON	(- - - TOTAL - - -) (- - CLAY - -) (- - SILT - -) (- - - - - SAND - - - - -) (- COARSE FRACTIONS (MM) -) (>2MM)										(- - - - -)						
				CLAY	SILT	SAND	FINE	CO3	FINE	COARSE	VF	F	M	C	VC	WEIGHT	WT			
				.002	.05	.05	.0002	.002	.02	.05	.10	.25	.5	1	2	5	20	.1	PCT OF	
				PCT OF <2MM (3A1)										PCT OF <75MM (3B1)		SOIL				
822080	1S	0-12	A	69.0	16.3	14.7	41.6		9.9	6.4	2.1	4.4	3.2	2.6	1.4	--	--	--	12	--
822081	2S	12-30	BA	72.5	15.5	12.0	44.5		9.8	5.7	2.7	3.7	2.5	2.1	1.0	--	--	--	9	--
822082	3S	30-55	B 11	73.4	15.0	11.6	47.7		9.3	5.7	2.3	3.3	2.3	2.0	1.7	--	--	--	9	--
822083	4S	55-75	B 12	66.7	8.1	25.2	39.7		4.0	4.1	2.6	4.0	4.0	6.5	8.1	--	--	--	23	--
822084	5S	75-100	B 13	68.4	12.9	18.7	46.5		7.6	5.3	2.4	3.1	2.8	3.8	6.6	--	--	--	16	--
822085	6S	100-160	BC1	69.5	14.1	16.4	49.0		7.5	6.6	3.0	3.6	3.0	3.6	3.2	--	--	--	13	--
822086	7S	160-195	BC2	69.6	14.2	16.2	44.9		7.5	6.7	3.4	4.2	3.1	3.0	2.5	--	--	--	13	--

SAMPLE NO.	HZN NO.	ORGN TOTAL		EXTR TOTAL		(- - - DIH-CIT - - -) (RATIO/CLAY) (ATTERBERG)				(- BULK DENSITY -)		COLE (- - - WATER CONTENT - -)		WRD							
		G	N	P	S	FL	AL	MN	CEC	BAR	LL	PI	MOIST		BAR	DRY	SOIL	MOIST	BAR	BAR	15
		6A1C	6B3A	6R3A	6C2B	6G7A	6D2A	8D1	8D1	4F1	4F	4A3A	4A1D	4A1H	4D1	4B4	4B1C	4B1C	4B2A	4C1	
		PCT OF <2MM		PCT OF <2MM		PCT OF <2MM		PCT OF <0.4MM		G/CC		CM/CM		PCT OF <2MM		CM/CM		CM/CM		CM/CM	
822080	1	1.70	0.147			8.3	1.1	0.3	0.19	0.43	61	19	1.14	1.35	0.058						
822081	2	1.13	0.105			8.9	1.1	0.2	0.16	0.44	74	33	1.06	1.29	0.068						
822082	3	0.79	0.077			9.0	1.0	0.2	0.16	0.44	66	25	1.06	1.27	0.062						
822083	4	0.59	0.056			11.8	1.2	1.5	0.18	0.45	61	20	1.08	1.31	0.066						
822084	5	0.50				11.8	1.1	0.3	0.16	0.46	76	36									
822085	6	0.40				11.6	1.1	0.2	0.15	0.48	69	29	1.13	1.43	0.082						
822086	7	0.23				10.9	0.9	0.1	0.15	0.45	70	30	1.12	1.32	0.056						

*** CONTINUATION ON NEXT PAGE ***

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Series: SND

Pedon No: S82FN-725-001

Taxonomy: Thixotropic, isohyperthermic Hydric Dystrandepts.

Latitude: 13° 40' N **Longitude:** 123° 17' E

Location: 15 km NE of Naga City at Philippine Union College, Canarines Province, S of Kotabumi.

Physiography: Upland ridge in level to undulating uplands

Geomorphic Position: Interfluvial shoulder

Slope and Aspect: 5 pct SW convex

Elevation: 350 m M.S.L

Precipitation: Udic moisture regime.

Water Table: Not observed

Drainage: Well drained

Permeability: moderate

Land Use: Cropland

Parent Material: moderately weathered, ash or ejecta

Described by: C. Alcade, M. Raymunde, P. Vicente, M. Mäusbach

Lower piedmont slope of Mt. Isarog.

Ap 0 - 20 cm Dark reddish brown (5YR 2/2) light clay loam; weak medium subangular blocky parting to weak fine granular structure; very friable, slightly sticky; slightly plastic; many very fine to fine roots; clear wavy boundary.
82P2074

BA 20 - 45 cm Dark brown (7.5YR 3/2) light clay loam; weak medium subangular blocky parting to weak fine to medium granular structure; friable, slightly sticky; slightly plastic; weakly smeary, very moist or wet; common very fine to fine roots; many krotovina, 10 mm thick; clear wavy boundary.
82P2075

Bw1 45 - 80 cm Brown to dark brown (7.5YR 4/4) clay loam; weak medium subangular blocky structure; friable, slightly sticky; slightly plastic; smeary, very moist or wet; a few fine roots; common krotovina, 10 mm thick; clear wavy boundary.
82P2076

Bw2 80 - 115 cm Brown to dark brown (7.5YR 4/4) clay loam; weak medium subangular blocky structure; friable, slightly sticky; slightly plastic; smeary, very moist or wet; a few fine roots; a few charcoal layers, 10 mm thick; gradual wavy boundary.
82P2077

Bw3 115 - 160 cm Brown to dark brown (7.5YR 4/4) heavy clay loam; weak medium subangular blocky structure; friable, slightly sticky; slightly plastic; smeary, very moist or wet; a few fine roots; a few charcoal layers, 10 mm thick; gradual wavy boundary.
82P2078

Bw4 160 - 190 cm Dark yellowish brown (10YR 4/4) light clay; weak medium subangular blocky structure; friable, sticky; plastic; smeary, very moist or wet; a few fine roots.
82P2079

* NOT DESIGNATED

SAMPLED AS: THRIOTROPIC, ISOMYPERYNERMIC HYDRIC DYSTRADEPT

S 82FH-725 -001

SAMPLE NOS. 82P2074 - 2079

FINAL DATE MAY 1983

PHILIPPIN

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NATIONAL SOIL SURVEY LABORATORY
LINCOLN, NEBRASKA

GENERAL METHODS 181A, 2A1, 2D

-1- -2- -3- -4- -5- -6- -7- -8- -9- -10- -11- -12- -13- -14- -15- -16- -17- -18- -19- -20-

SAMPLE NO.	HR NO.	DEPTH (CM)	HORIZON	(- - - TOTAL - - -)			(- - - CLAY - - -)		(- - - SILT - - -)		(- - - SAND - - -)				(- - - COARSE FRACTIONS (MM) - - -)						
				CLAY	SILT	SAND	FINE	COARSE	VP	F	B	C	VC	1	2	5	20	75			
				LT	.002	.05	LT	LT	LT	COARSE	VP	F	B	C	VC	1	2	5	20	75	
					.002	.05	.0002	.002	.02	.05	.10	.25	.50	1	2	5	20	75			
822074	15	0-20	AP		1.1	31.3	67.6		18.5	12.8	21.6	29.1	13.2	3.8	0.3						
822075	25	20-45	BA		1.0	21.0	77.2		11.3	10.5	19.9	28.0	18.5	9.3	0.7						46
822076	35	45-80	BW1			20.0	80.0		12.4	7.6	17.7	23.4	13.2	15.2	10.5						57
822077	45	80-115	BW2			17.8	82.2		11.2	6.6	16.8	22.0	14.0	16.6	11.2						62
822078	55	115-160	Bk			17.0	83.0		8.7	8.3	13.2	22.1	17.3	17.2	13.2						65
822079	65	160-190	BW4			13.0	87.0		5.5	7.5	11.2	21.1	18.5	21.1	15.1						70

SAMPLE NO.	HR NO.	DEPTH (CM)	HORIZON	TOTAL C	MINI N	TOTAL S	(- - - DITH-CIT - - -)		(- - - RATIO/CLAY - - -)		(- - - ATTENBERG - - -)		(- - - BULK DENSITY - - -)		(- - - COLP - - -)		(- - - WATER CONTENT - - -)			VMD WHOLE SOIL				
							EXTRACTABLE	EXTRACTABLE	15	LIMITS	FIELD 1/3	OVER WHOLE FIELD	FIELD 1/10	1/3	15	WHOLE								
				FE	AL	RR	CEC	BAR	LL	PI	MOIST	BAR	DRY	SOIL	MOIST	BAR	BAR	BAR	BAR	SOIL				
				6C2B	6G7A	6D2A	5D1	5D1	4F1	4F1	4A3A	5E1D	4E1B	5D1	4B4	4B1C	4B2A	4C1	4C1	4C1				
822074	1	0.09	0.505	76	2.8	2.8	0.1	88.00	30.45	75	3	0.75	0.92	0.070						63.2	33.5	0.22		
822075	2	4.74	0.251	86	2.8	1.6	0.1	34.20	31.80	70	2	0.68	0.95	0.118							80.3	31.8	0.33	
822076	3	2.09	0.170	90	2.3	1.4	0.1														70.1	29.7	0.30	
822077	4	1.88	0.150		2.7	1.6	0.1															71.2	31.9	0.30
822078	5	1.74	0.130		3.1	1.7	0.1															85.3	33.9	0.33
822079	6	1.75	0.123		4.1	2.3	0.1															100.1	36.7	0.39

SAMPLE NO.	HR NO.	DEPTH (CM)	HORIZON	(- - - WHOAC EXTRACTABLE BASES - - -)				ACID-EXTRACTABLE		(- - - CEC - - -)		AL	(- - - BASE SAT - - -)		(- - - CO2 AS - - -)		(- - - PH - - -)	
				5B5A	5B5A	5B5A	5B5A	IT1	AL	SUR	WHOLE		BASES	SAT	WHOLE	CACO3	WHOLE	WHOLE
				6A2E	6D2D	6P2B	6D2B	6H5A	6G9A	5A3A	5A3B	5G1	5C3	5C1	6E1G	8C1D	8C1F	
822074	1	1.7	0.4	0.1	0.1	2.3	64.3			56.6	52.8							
822075	2	3.3	1.3	0.1	0.1	4.8	40.8			45.6	38.2					11.4	5.0	5.8
822076	3	2.7	1.1	TR	0.1	3.9	33.3			37.2	30.5					11.1	5.5	6.0
822077	4	1.8	0.8	TR	0.2	2.8	41.1			43.9	38.6					10.9	5.5	6.0
822078	5	1.6	0.8	TR	0.2	2.6	41.9			44.5	37.2					10.9	5.4	5.9
822079	6	1.6	0.8	TR	0.1	2.5	43.6			46.1	44.2					10.8	5.3	5.8

SAMPLE NO.	HR NO.	DEPTH (CM)	HORIZON	SURFACE AREA		(EXTRACTABLE AL)		P-ADSORP COMF	R-RET N.E. METHOD	(- - - TOTAL ANALYSIS (%) - - -)		(- - - MINERALOGY - - -)		TOTAL DON RES WEATH	
				EDM	EDM	KOH	OXALATE			CLAY	CLAY	I-BAY	DYA		
				7D2	7D2	6A2	6A2			K2O	P2O5	7A21	7A21	7A3	7A3
										6A3A <td>6A7A <td></td> <td></td> <td></td> <td></td> </td>	6A7A <td></td> <td></td> <td></td> <td></td>				
822074	1	65	227			4.9	0.99	100		0.3	0.7				
822075	2	96	336			4.6	0.98	99							
822076	3	107	374			3.4	0.98	100							
822077	4	117	409			5.0	0.98	99		0.5					
822078	5	129	451			4.3	0.97	99							
822079	6	138	483			4.4	0.99	99			1.1				

FAMILY CONTROL SECTION: DEPTH 25-100 PCT CLAY 0 PCT .1-75HR 62

ANALYSIS: S- ALL OR SIEVED <2MM BASIS

MINERALOGY: KIND OF MINERAL IS AMORPHOUS CR CRISTOBALITE

RELATIVE AMOUNT 6 INDURINITE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

154

CP82FN145

SAMPLE NO.	HEN NO.	MINERALOGY										X-RAY		DTA	TOT ANAL						
		FA	RE	7B1A	7A2I	7A2I	7A2I	7A2I	7A2I	7A3	7A3	K20	FE								
		SAND/SILT										CLAY									
		PCT										RELATIVE AMOUNTS		PCT		6Q3A	6C7A				
82P2074	1																				
82P2075	2																				
82P2076	3	FNES		OT98	GA 2	GS<1														0.3	0.7
82P2077	4																				
82P2078	5	FNES		OT99	GA 1	GS<1														0.5	0.0
82P2079	6																				

ANALYSES: S=ALL ON SIEVED < 2mm BASIS

MINERALOGY: FA = FRACTION ANALYZED RE = RESISTANT

KIND OF MINERAL: NX = NON-CRYSTALLINE CR = CRISTOBALITE GA = GLASS AGGREGATES GS = GLASS OT = OTHER

RELATIVE AMOUNT: 6 INDETERMINATE 5 DOMINANT 4 ABUNDANT 3 MODERATE 2 SMALL 1 TRACE

MINERALOGY BASED ON SAND/SILT:

MINERALOGY BASED ON CLAY:

FAMILY PLACEMENT: