APPENDICES

APPENDIX A

SOIL PROFILE DESCRIPTION

Location 1 (Sandy textured salt affected soils)

Pedon 1

I Information on the site

Profile symbol	: Pedon 1
Soil name	: Roi Et, saline variant
Classification	: Typic Natraqualf
Date of examination	: April 18, 2004
Described by	: Irb Kheoruenromne, Napaporn Wongpokhom, Nuttaphorn Prakongkep, Chutharmard Kaewmano, Krichsana Ramsoot and Saranya Norkaew
Location	: Approximately 400 m west of Phera Yuen-Mancha Khiri Road (No. 2062) at 3 km from Phera Yuen Crossroads, Ban Bo Kae, Tambon Kham Pom, Amphoe Phera Yuen, Khon Kaen province
Elevation	: Approximately 178 m (MSL)
Map sheet number	: 5541 IV Coordination : 48 0248677 m E., 1804999 m N.

Landform

1. Physiographic position	: Low terrace (Mid-low terrace)
2. Surrounding landform	: Flat
3. Slope on which profile site	: 1%
Land use	: Paddy/ Left idle because of salt effect
Annual rainfall	: Approximately 1300 mm
Mean temperature	: Approximately 26 ^{o}C
Climate	: Tropical savanna
Others	: Agricultural and settlement development

II General information on the soil

Parent material	: Wash over residuum derived from clastic sedimentary rock
Drainage	: Poorly drained
Permeability	: Slow
Runoff	: Slow
Depth of ground water	: Approximately 195 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apng	0-12	Mixed light brownish gray (10YR 6/2) 60 %, reddish yellow (7.5YR 7/6) 30% and grayish brown (10YR 5/2) 10%; sandy loam; moderate fine and medium semi-angular blocky structure; slightly sticky and slightly plastic, slightly friable moist, slightly hard dry; common clay bridges among sand grains; many variegated sands; few very fine, fine and medium vesicular pores; practically no roots; moderately alkaline (field pH 8.0); clear and smooth boundary to Bng.

Bng	12-37	Reddish yellow (7.5YR 7/6), common fine prominent brownish yellow (10YR 6/8) and common fine distinct reddish yellow (7.5YR 6/8) mottles; loamy sand; weak medium and coarse semi-angular blocky structure; non-sticky and non-plastic, firm moist, loose dry; many variegated sands; few very fine, fine and medium vesicular pores; practically no roots; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng1.
Btng1	37-60	Reddish yellow (7.5YR 7/6), few fine and medium faint strong brown (7.5YR 5/6) and common medium distinct brownish yellow (10YR 6/8) mottles; sandy loam; moderate fine and medium semi-angular blocky structure; slightly sticky and slightly plastic, slightly friable moist, slightly hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; few manganese oxides concretions and nodules, common variegated sands; very few very fine, common fine and few medium vesicular pores; practically no root; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng2.
Btng2	60-76	Light brown (7.5YR 6/4), common medium prominent yellowish brown (10YR 5/8) mottles; sandy clay loam; moderate fine and medium angular blocky structure; slightly sticky and moderately plastic, firm moist, slightly hard dry; common distinct clay bridges among sand grain and few faint clay coats on pore walls; common variegated sand grains; very few very fine and few fine vesicular pores; practically no root; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng3.
Btng3	76-100	Pink (7.5YR 7/4), many medium prominent brownish yellow (10YR 6/8) and yellow (10YR 7/8) mottles; slightly gravelly sandy clay loam; strong fine and medium angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; common faint clay coats on ped faces and pore walls and clay bridges among sand grains; common variegated sand grains; few large carbonate cobbles, few dark spots of manganese oxides; few very fine and common fine vesicular and few fine simple tubular pores; practically no root; few traces of dead roots; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng4.
Btng4	100-128	Brownish yellow (10YR 6/6); sandy clay loam; moderate fine and medium semi-angular blocky structure; slightly sticky and moderately plastic, slightly firm moist, slightly hard dry; common faint clay bridges among sand grains; common variegated sand grains, few large carbonate cobbles, common dark spots of manganese oxides; few very fine and fine vesicular pores; practically no roots; few traces of dead roots; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng5.
Btng5	128-140	Light brown (7.5YR 6/4), common medium and few fine prominent brownish yellow (10YR 6/8) mottles; sandy loam; moderate fine and medium subangular blocky structure; slightly sticky and moderately plastic, slightly firm moist, slightly hard dry; common faint clay bridges among sand grains; common variegated sand grains, few small manganese oxides nodules; few very fine and fine vesicular pores; practically no roots; moderately alkaline (field pH 8.0); abrupt and smooth boundary to 2Btng6.

2Btng6	140-170	Mixed pink (7.5YR 7/4) 45% and pinkish gray (7.5YR 7/2) 30%, many medium prominent brownish yellow (10YR 6/8) and yellowish brown (10YR 5/8) mottles; sandy clay loam; moderate fine and medium angular blocky structure; moderately sticky and moderately plastic, firm moist, slightly hard dry; common faint clay coats on ped faces and pore walls and clay bridges among sand grains; common dark spots of manganese oxides and variegated sand grains; few very fine and fine vesicular pores; practically no roots; moderately alkaline (field pH 8.0); gradual and smooth boundary to 2Btng7.
2Btng7	170-190+	Pink (7.5YR 7/4), common medium prominent brownish yellow (10YR 6/8) mottles; sandy clay loam; moderate fine and medium semi-angular blocky structure; slightly sticky and moderately plastic, firm moist, hard dry; common faint clay coats on ped faces and pore walls and clay bridges among sand grains; common dark spots of manganese oxides nodules and concretions (soft) and common variegated sands; few very fine and fine vesicular pores; practically no roots; few fine cracks; moderately alkaline (field pH 8.0).

Pedon 2

I Information on the site

Profile symbol	: Pedon 2
Soil name	: Roi Et, saline variant
Classification	: Typic Natraqualf
Date of examination	: April 19, 2004
Described by	: Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Nuttaphorn Prakongkep, Chutharmard Kaewmano, Krichsana Ramsoot and Saranya Norkaew
Location	: Approximately 400 m west of Phera Yuen-Mancha Khiri Road (No. 2062) at 3 km from Phera Yuen Crossroads, Ban Bo Kae, Tambon Kham Pom, Amphoe Phera Yuen, Khon Kaen province
Elevation	: Approximately 178 m (MSL)
Map sheet number	: 5541 IV Coordination : 48 0248690 m E., 1805065 m N.

Landform

1. Physiographic position	: Low erosional terrace
2. Surrounding landform	: Slightly undulating
3. Slope on which profile site	: 1%
Land use	: Paddy
Annual rainfall	: Approximately 1300 mm
Mean temperature	: Approximately 26 ^{o}C
Climate	: Tropical savanna
Others	: Agricultural and settlement

II General information on the soil

Parent material	: Wash over residuum derived from clastic sedimentary rock
Drainage	: Poorly drained
Permeability	: Slow
Runoff	: Slow
Depth of ground water	: Approximately 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apng	0-20	Mixed pale brown (10YR 6/3) 70%, pink (7.5YR 7/4) 20% and light brownish gray (10YR 6/2) 10%; loamy sand; moderate weak fine and medium subangular blocky structure; non-sticky and non-plastic, friable moist, soft dry; common fine variegated sands; common very fine, fine and few medium vesicular pores; many very fine, common fine and few medium roots; few traces of dead roots; slightly acid (field pH 6.5); clear and smooth boundary to Btng1.
Btng1	20-34	Pink (7.5YR 7/4), few fine prominent brownish yellow (10YR 6/8) mottles; sandy loam; strong fine and medium angular blocky structure; non-sticky and non-plastic, firm moist, slightly hard dry; few faint clay bridges among sand grains; common fine variegated sands; few very fine and fine vesicular and simple tubular pores; common very fine and fine roots; few traces of dead roots; strongly alkaline (field pH 8.5); gradual and smooth boundary to Btng2.
Btng2	34-55	Pink (5YR 7/4); sandy loam; strong medium and coarse angular blocky structure; non-sticky and slightly plastic, firm moist, hard dry; few faint clay coats on ped faces and pore walls and common faint clay bridges among sand grains; common fine variegated sands; few very fine and common fine vesicular and few fine simple tubular pores; few very fine and fine roots; few manganese oxides concretions and nodules; strongly alkaline (field pH 8.5); clear and smooth boundary to Btng3.
Btng3	55-80	Pink (7.5YR 7/4); sandy clay loam; strong medium and coarse angular blocky structure; slightly sticky and slightly plastic, firm moist, slightly hard dry; common faint clay coats on ped faces and pore walls and common faint clay bridges among sand grains; common fine variegated sands; few very fine and common fine vesicular and few fine simple tubular pores; very few very fine and fine roots; very few manganese oxides concretions and nodules; strongly alkaline (field pH 8.5); gradual and smooth boundary to Btng4.
Btng4	80-109	Very pale brown (10YR 7/4), few fine and medium prominent yellow (2Y 7/6); sandy clay loam; moderate fine and medium semi-angular blocky structure; slightly sticky and moderately plastic, firm moist, slightly hard dry; common faint clay coats on ped faces and pore walls and common faint clay bridges among sand grains; common fine variegated sands; few very fine and common fine vesicular and few fine simple tubular pores; very few very fine and fine roots; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng5.
Btng5	109-130	Mixed yellow (10YR 7/8-7/6) 70%, pinkish gray (7.5YR 7/2) 10%, common medium distinct brownish yellow (10YR 6/8); sandy clay loam; moderate fine and medium angular blocky structure; slightly sticky and moderately plastic, firm moist, slightly hard dry; common faint clay coats on ped faces and pore walls and common faint clay bridges among sand grains; common fine variegated sands and few very fine cracks; few very fine and common fine vesicular and few fine simple tubular pores; very few very fine and fine roots; few traces of dead roots; moderately alkaline (field pH 8.0); clear and smooth boundary to Btcng.

Btcng	130-142	Pinkish gray (7.5YR 7/2), common medium prominent light red (2.5YR 6/8); sandy loam; moderate fine and medium angular blocky structure; slightly sticky and moderately plastic, firm moist, slightly hard dry; few faint clay coats on pore walls and ped faces and common faint clay bridges among sand grains; common fine variegated sands and few very fine cracks; few very fine and common fine vesicular and few fine simple tubular pores; very few very fine and fine roots; many manganese oxides concretions and nodules; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btng6.
2Btng6	142-175	Mixed pink (5YR 7/3) 45%, light reddish brown (5YR 6/4) 20% and pinkish gray (5YR 7/2) 10%, many medium prominent light red (2.5YR 6/8) mottles; sandy clay loam; strong medium and coarse angular blocky structure; moderately sticky and moderately plastic, very firm moist, slightly hard dry; common faint clay coats on ped faces and pore walls and clay bridges among sand grains; common fine variegated sands; few very fine and common fine vesicular and few fine simple tubular pores; practically no roots; few fine cracks; moderately alkaline (field pH 8.0); gradual and smooth boundary to 2Btng7.
2Btng7	175-200+	Mixed pink (5YR 7/3) 40%, light reddish brown (5YR 6/4) 20%, and pinkish gray (5YR 7/2) 10%, many common prominent light red (2.5YR 6/8) mottles; sandy clay loam; strong medium and coarse angular blocky structure; moderately sticky and moderately plastic, very firm moist, slightly hard dry; common faint clay coats on ped faces and pore walls and clay bridges among sand grains; common fine variegated sands; very few fine and few medium vesicular and very few fine simple tubular pores; practically no roots; few fine cracks; moderately alkaline (field pH 8.0).

Pedon 3

I <u>Information on the site</u>

Profile symbol : Pedon 3
Soil name : Roi Et, saline variant
Classification : Typic Natraqualf
Date of examination : April 19, 2004
Described by : Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Nuttaphorn Prakongkep, Chutharmard Kaewmano, Krichsana Ramsoot and Saranya Norkaew
Location : Approximately 400 m west of Phera Yuen-Mancha Khiri Road (No. 2062) at 3 km from Phera Yuen Crossroads, Ban Bo Kae, Tambon Kham Pom, Amphoe Phera Yuen, Khon Kaen province
Elevation : Approximately 176 m (MSL)
Map sheet number : 5541 IV Coordination : 48 0248707 m E., 1805123 m N.

Landform

1. Physiographic position : Low erosional terrace
2. Surrounding landform : Slightly undulating
3. Slope on which profile site : 1%

Land use : Paddy rice

Annual rainfall	: Approximately 1300 mm
Mean temperature	: Approximately 26 ^{o}C
Climate	: Tropical savanna
Others	: Agricultural and settlement

II General information on the soil

Parent material	: Wash over residuum derived from clastic sedimentary rock
Drainage	: Poorly drained
Permeability	: Slow
Runoff	: Slow
Depth of ground water	: More than 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apg	0-12	Mixed grayish brown (10YR 5/2) 70%, light reddish brown (5YR 6/4) 15% and very dark grayish brown (10YR 3/2) 5%, common fine prominent strong brown (7.5YR 5/8), yellowish red (5YR 4/6) and dark reddish brown (5YR 3/2) mottles; fine sandy loam; moderate fine and medium subangular blocky structure; slightly sticky and slightly plastic, slightly firm moist, slightly hard dry; few faint clay bridges among sand grains; few variegated sands; very few very fine and fine vesicular and few fine simple tubular pores; common very fine, few fine and moderate roots; common sand patches; moderately acid (field pH 6.0); clear and smooth boundary to Btg1.
Btg1	12-20/25	Mixed light reddish brown (5YR 6/4) 56%, and reddish brown (5YR 5/3) 36%, common fine prominent strong brown (7.5YR 5/8) and very dark grayish brown (10YR 3/2) mottles; fine sandy loam; moderate medium and coarse semi-angular blocky structure; slightly sticky and moderately plastic, slightly firm moist, slightly hard dry; very few faint clay coats on pore walls and common faint clay bridges among sand grains; common variegated sands; few very fine and common fine vesicular and simple tubular pores; few very fine and fine roots; many traces of dead roots; slightly acid (field pH 6.5); clear and wary boundary to Btng.
Btng	25-48/52	Mixed reddish brown (5YR 5/4) 70%, and pinkish gray (5YR 6/2) 36%, common medium prominent yellowish brown (10YR 5/8) mottles; fine sandy clay loam; moderate fine and medium subangular blocky structure; slightly sticky and moderately plastic, slightly firm moist, slightly hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; common variegated sands; common very fine and fine vesicular and few fine simple tubular pores; common very fine and fine roots; few traces of dead roots, few manganese oxides concretions and nodules; strongly acid (field pH 5.5); clear and wary boundary to Btg2.

Btg2	52-80/85	Mixed light reddish brown (5YR 6/4) 75%, reddish brown (5YR 5/4) 10% and pinkish gray (5YR 6/2) 10%, common medium prominent red (2.5YR 4/6) and strong brown (7.5 YR 4/6) mottles; slightly gravelly sandy clay loam (sandy loam); strong fine and medium subangular blocky structure; slightly sticky and moderately plastic, slightly firm moist, slightly hard dry; common faint clay coats on ped faces and pore walls and clay bridges among sand grains; common variegated sands; very few very fine and fine vesicular and few fine simple tubular pores; few very fine and fine roots; few manganese oxides concretions and nodules; very strongly acid (field pH 4.5); clear and wary boundary to Btg3.
Btg3	85-110	Mixed yellowish brown (10YR 5/4) 60%, light reddish brown (5YR 6/4) 25% and gray (10YR 6/1) 5%, common fine distinct yellowish brown (10YR 5/8), dark yellowish brown (10YR 4/6) and very dark gray (10 YR 3/1) mottles; sandy clay loam; strong fine and medium semi-angular blocky structure; slightly sticky and moderately plastic, firm moist, hard dry; common faint clay coats on ped faces and pore walls and clay bridges among sand grains; common variegated sands; few very fine, common fine and few medium vesicular and few fine simple tubular pores; very few very fine and fine roots; few manganese oxides concretions and nodules; very strongly acid (field pH 4.5); clear and smooth boundary to Btg4.
Btg4	110-130	Mixed light reddish brown (5YR 6/4) 50% and pinkish gray (5YR 6/2) 20%, many medium and coarse prominent yellowish brown (10YR 5/8) and common fine prominent strong brown (7.5YR 4/6) mottles; sandy clay loam; strong fine and medium semi-angular blocky structure; slightly sticky and moderately plastic, firm moist, slightly hard dry; common faint clay coats on ped faces and pore walls and clay bridges among sand grains; common variegated sands, very few manganese oxides accumulation; few very fine, common fine and few medium vesicular and few fine simple tubular pores; very few very fine and fine roots; few traces of dead roots; very strongly acid (field pH 4.5); gradual and smooth boundary to Btg5.
Btg5	130-153	Mixed light reddish brown (5YR 6/4) 35% and pinkish gray (5YR 7/2) 20%, many medium and coarse prominent yellowish brown (10YR 5/8), common fine prominent very dark gray (10YR 3/1) and common fine distinct strong brown (7.5YR 5/6) mottles; sandy loam; moderate fine and medium subangular blocky structure; slightly sticky and slightly plastic, slightly firm moist, slightly hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; common fine variegated sands; few very fine, common fine and few medium vesicular and few fine simple tubular pores; very few very fine and fine roots; few traces of dead roots; very strongly acid (field pH 4.5); gradual and smooth boundary to 2Btg6.
2Btg6	153-180	Mixed light reddish brown (5YR 6/4) 70% and pinkish gray (5YR 6/2) 20%, common fine prominent strong brown (7.5YR 5/8) and common medium prominent yellowish brown (10YR 5/8) mottles; sandy loam (loamy fine sand); moderate fine and medium semi-angular blocky structure; non-sticky and non-plastic, slightly firm moist, slightly hard dry; common faint clay bridges among

		sand grains; few fine variegated sands, few very fine vesicular pores; very few very fine and fine roots; few traces of dead roots; neutral (field pH 7.0); gradual and smooth boundary to 2Btg7.
2Btg7	180-205+	Mixed dark reddish gray (5YR 4/2) 85% and light reddish brown (5YR 6/4) 10%, common fine prominent strong brown (7.5YR 5/8) mottles; sandy loam (loamy fine sand); moderate fine and medium subangular blocky structure; non-sticky and non-plastic, slightly firm moist, slightly hard dry; common faint clay bridges among sand grains and very few faint clay coats on pore walls; common variegated sands, few very fine and fine vesicular and vew very fine simple tubular pores; very few very fine and fine roots; few traces of dead roots; moderately acid (field pH 6.0).

Pedon 4

I Information on the site

Profile symbol	: Pedon 4
Soil name	: Roi Et, saline variant
Classification	: Typic Natraqualf
Date of examination	: April 19, 2004
Described by	: Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Nuttaphorn Prakongkep, Chutharmard Kaewmano, Krichsana Ramsoot and Saranya Norkaew
Location	: Approximately 400 m west of Phera Yuen-Mancha Khiri Road (No. 2062) at 3 km from Phera Yuen Crossroads, Ban Bo Kae, Tambon Kham Pom, Amphoe Phera Yuen, Khon Kaen province
Elevation	: Approximately 180 m (MSL)
Map sheet number	: 5541 IV Coordination : 48 0248723 m E., 1805177 m N.

Landform

1. Physiographic position	: Low erosional terrace
2. Surrounding landform	: Slightly undulating
3. Slope on which profile site	: 1%
Land use	: Paddy rice
Annual rainfall	: Approximately 1300 mm
Mean temperature	: Approximately 26 ^{o}C
Climate	: Tropical savanna
Others	: Agricultural and settlement

II General information on the soil

Parent material	: Wash over residuum derived from clastic sedimentary rock
Drainage	: Poorly drained
Permeability	: Slow
Runoff	: Slow
Depth of ground water	: Approximately 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apng	0-20	Mixed yellowish brown (10YR 5/4) 85% and brown (7.5YR 5/4) 5%, common fine prominent strong brown (7.5YR 4/6) mottles; sandy clay loam; strong fine and medium angular blocky structure; slightly sticky and moderately plastic, firm moist, slightly hard dry; few faint clay coats on pore walls and clay bridges among sand grains; few fine variegated sands; very few very fine and few fine vesicular and few fine simple tubular pores; many very fine, fine and medium roots; few traces of dead roots; slightly acid (field pH 6.5); abrupt and smooth boundary to Btng1.
Btng1	20-48	Mixed light brown (7.5YR 6/4) 75% and brown (7.5YR 5/4) 10%, common medium distinct strong brown (7.5YR 5/8) mottles; sandy clay loam; moderate fine and medium semi-angular blocky structure; slightly sticky and slightly plastic, slightly firm moist, soft dry; very few faint clay coats and common faint clay bridges among sand grains; common variegated sands; few very fine, fine and medium vesicular pores; common very fine and fine and few medium roots; common traces of dead roots; very strongly acid (field pH 5.0); gradual and smooth boundary to Btg1.
Btg1	48-70	Mixed light reddish brown (5YR 6/4) 70% and pinkish gray (5YR 7/2) 5%, common coarse prominent strong brown (7.5YR 5/6) mottles; sandy clay loam (sandy loam); moderate fine and medium subangular blocky structure; slightly sticky and slightly plastic, slightly firm moist, soft dry; very few faint clay bridges among sand grains; common fine variegated sands; few very fine and fine vesicular pores, common very fine and fine and few medium roots; few traces of dead roots; very strong acid (field pH 4.5); clear and smooth boundary to Btg2.
Btg2	70-95	Mixed light reddish brown (5YR 6/4) 55%, pinkish gray (5YR 7/2) 10% and gray (5YR 6/1) 5%, common fine prominent light red (2.5YR 6/8), yellowish brown (10YR 5/8) and yellowish red (5YR 5/8) and common medium prominent dark yellowish brown (10YR 4/6) mottles; sandy clay loam; strong medium and coarse semi-angular blocky structure; slightly sticky and moderately plastic, slightly firm moist, slightly hard dry; common faint clay coats on pore walls and clay bridges among sand grains; common fine variegated sands; very few very fine and common fine vesicular and few fine simple tubular pores; few traces of dead roots; very strongly acid (field pH 4.5); clear and smooth boundary to Btng2.
Btng2	95-130	Mixed light reddish brown (5YR 6/4) 75%, gray (5YR 6/1) 5% and pinkish gray (5YR 7/2), common fine prominent yellowish brown (10YR 5/8) and common medium prominent red (2.5YR 4/8) mottles; sandy clay loam; strong medium and coarse semi-angular blocky structure; slightly sticky and slightly plastic, slightly firm moist, slightly hard dry; common faint clay coats on pore walls and clay bridges among sand grains; common fine variegated sands, few manganese oxide nodules and soft accumulation; very few very fine and common fine vesicular and few fine simple tubular pores; very few fine and medium roots; few traces of dead roots; very strongly acid (field pH 4.5); clear and smooth boundary to Btng3.

Btng3	130-142/150	Mixed light reddish brown (5YR 6/4) 75% and pinkish gray (5YR 6/2) 5%, common fine prominent yellowish brown (10YR 5/6), yellowish brown (10YR 5/8) and very dark grayish brown (10YR 3/2) mottles; sandy clay loam; strong medium and coarse semi-angular blocky structure; slightly sticky and moderately plastic, firm moist, slightly hard dry; common faint clay coats on pore walls and clay bridges among sand grains, few manganese oxide nodules and soft accumulation and common fine variegated sands; few very fine and fine vesicular and few fine simple tubular pores; practically no roots; few traces and dead roots; neutral (field pH 7.0); clear and smooth boundary to 2Btng4.
2Btng4	150-180	Mixed light reddish brown (5YR 6/3) 75% and pinkish gray (5YR 6/2) 20%, common fine prominent olive brown (2.5Y 4/4) and light olive brown (2.5Y 5/6) mottles; sandy clay loam (sandy loam); strong medium and coarse semi-angular blocky structure; slightly sticky and moderately plastic, firm moist, slightly hard dry; common faint clay coats on pore walls and clay bridges among sand grains; common fine variegated sands; few very fine and fine vesicular and few fine simple tubular pores; practically no roots; few manganese oxide nodules; moderately alkaline (field pH 8.0); gradual and smooth boundary to 2Btng5.
2Btng5	180-200+	Mixed light reddish brown (5YR 6/3) 85% and pinkish gray (5YR 7/2) 10%, common fine prominent very dark grayish brown (2.5Y 3/2) and common medium prominent light olive brown (2.5Y 5/6) mottles; sandy clay loam; moderate fine and medium semi-angular blocky structure; slightly sticky and moderately plastic, firm moist, slightly hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains, common fine variegated sands; few very fine and fine vesicular and few fine simple tubular pores; very manganese oxide nodules; moderately alkaline (field pH 8.0).

Pedon 5

I Information on the site

Profile symbol : Pedon 5
Soil name : Roi Et, saline variant
Classification : Typic Natraqualf
Date of examination : April 19, 2004
Described by : Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Nuttaphorn Prakongkep, Chutharmard Kaewmano, Krichsana Ramsoot and Saranya Norkaew
Location : Approximately 400 m west of Phera Yuen-Mancha Khiri Road (No. 2062) at 3 km from Phera Yuen Crossroads, Ban Bo Kae, Tambon Kham Pom, Amphoe Phera Yuen, Khon Kaen province
Elevation : Approximately 179 m (MSL)
Map sheet number : 5541 IV Coordination : 48 0248736 m E., 1805233 m N.

Landform

1. Physiographic position : Low terrace
2. Surrounding landform : Slightly undulating

3. Slope on which profile site	: 1%
Land use	: Paddy rice
Annual rainfall	: Approximately 1300 mm
Mean temperature	: Approximately 26 ^{o}C
Climate	: Tropical savanna
Others	: Agricultural and settlement

II General information on the soil

Parent material	: Wash deposits
Drainage	: Poorly drained
Permeability	: Slow
Runoff	: Slow
Depth of ground water	: Approximately 190 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apng	0-20	Mixed dark reddish gray (5YR 4/2) 75 % and yellowish red (5YR 5/6) 20%, common fine distinct yellowish red (5YR 4/6) and strong brown (7.5YR 4/6) mottles; sandy loam; moderate fine and medium subangular blocky structure; slightly sticky and moderately plastic, slightly firm moist, slightly hard dry; common variegated sands; common very fine and fine vesicular pores; many very fine and fine and common medium roots; few traces of dead roots; very strongly acid (field pH 5.0); clear and smooth boundary to Btg1.
Btg1	20-40	Mixed reddish brown (5YR 5/4) 60%, light reddish brown (5YR 6/3) 10% and pinkish gray (5YR 6/2) 10%, common fine distinct strong brown (7.5YR 5/6-5/8) mottles; sandy clay loam; moderate fine and medium subangular blocky structure; slightly sticky and moderately plastic, slightly firm moist, slightly hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains, common variegated sands, few iron and manganese oxides nodules; common very fine and fine vesicular and few fine simple tubular pores; common very fine, fine and medium roots; few traces of dead roots; very strongly acid (field pH 4.5); clear and smooth boundary to Btg2.
Btg2	40-70	Mixed light reddish brown (5YR 6/4) 75% and pinkish gray (5YR 6/2) 10%, common fine prominent strong brown (7.5YR 5/8-4/6) mottles; sandy clay loam; moderate fine and medium subangular blocky structure; slightly sticky and moderately plastic, slightly firm moist, slightly hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; few iron and manganese oxides nodules and concretions; few very fine and common fine vesicular and few fine simple tubular pores; common very fine and fine and few medium roots; few variegated sands; very strongly acid (field pH 4.5); gradual and smooth boundary to Btg3.

Btg3	70-90	Mixed light reddish brown (5YR 6/4) 68%, reddish yellow (5YR 6/6) 20% and reddish brown (5YR 5/4) 5%, common fine prominent dark yellowish brown (10YR 4/6), dark brown (10YR 3/3) and strong brown (7.5YR 5/8) mottles; sandy clay loam; moderate fine and medium subangular blocky structure; slightly sticky and moderately plastic, firm moist, hard dry; common faint clay coats on pore walls and clay bridges among sand grains; common variegated sands, few very fine and common fine vesicular and few fine and medium simple tubular pores; common very fine and fine and few medium roots; few traces of dead roots; very strongly acid (field pH 4.5); clear and smooth boundary to Btg4.
Btg4	90-112	Mixed light reddish brown (5YR 6/4) 70% and pink (5YR 7/3) 20%, common medium distinct yellowish red (5YR 5/8) and common medium prominent reddish yellow (7.5YR 6/6) mottles; sandy clay loam; moderate fine and medium subangular blocky structure; slightly sticky and moderately plastic, firm moist, hard dry; common faint clay coats on pore walls and clay bridges among sand grains; common variegated sands, few very fine and common fine vesicular and few fine simple tubular pores; few very fine and medium roots; very strongly acid (field pH 4.5); gradual and smooth boundary to Btg5.
Btg5	112-140	Mixed light reddish brown (5YR 6/4) 68% and reddish yellow (5YR 6/6) 20%, common medium distinct yellowish red (5YR 5/6) and reddish yellow (5YR 6/8) and common medium prominent reddish yellow (7.5YR 6/8) mottles; sandy clay loam; moderate fine and medium semi-angular blocky structure; slightly sticky and moderately plastic, firm moist, slightly hard dry; common faint clay coats on pore walls and clay bridges among sand grains; common variegated sands, few iron oxides nodules; few very fine and common fine vesicular and few fine simple tubular pores; few very fine and medium roots; very strongly acid (field pH 4.5); clear and smooth boundary to Btg6.
Btg6	140-170	Mixed light reddish brown (5YR 6/3) 83% and reddish yellow (5YR 6/6) 10%, common fine and medium prominent strong brown (7.5YR 5/8) and common fine and medium distinct yellowish red (5YR 5/8) mottles; sandy clay loam; moderate fine and medium subangular blocky structure; slightly sticky and moderately plastic, slightly firm moist, hard dry; common faint clay coats on pore walls and clay bridges among sand grains; common variegated sands, few iron oxides nodules; few very fine and common fine vesicular and few fine simple tubular pores; few very fine, fine and very fine medium roots; very strongly acid (field pH 4.5); gradual and smooth boundary to Btg7.
Btg7	170-193+	Mixed light reddish brown (5YR 6/4) 73%, reddish yellow (5YR 6/6) 20% and pinkish gray (7.5YR 7/2) 3%, common fine prominent strong brown (7.5YR 5/8) and few fine distinct yellowish red (5YR 5/8) mottles; sandy loams; strong fine and medium subangular blocky structure; slightly sticky and moderately plastic, slightly firm moist, slightly hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; common variegated sands, few iron oxides nodules, common spot accumulation of iron oxdies; few very fine and common fine vesicular and few fine simple tubular pores; very few very fine, fine and medium roots; very strongly acid (field pH 4.5).

Location 2 (Clayey textured salt affected soils)

Pedon 6

I Information on the site

Profile symbol	: Pedon 6
Soil name	: Phimai series
Classification	: Typic Natraqualf
Date of examination	: May 18, 2004
Described by	: Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Nuttaphorn Prakongkep, Chutharmard Kaewmano, Krichsana Ramsoot and Saranya Norkaew
Location	: Approximately 90 m South of Talad Kae-Phimai Road (No. 2163) at ≅ 3.90 km from Talad Kae Crossroads, Ban Tum yae, Tambon Krabuang Yai, Amphoe Phimai, Nakhon Ratchasima province
Elevation	: Approximately 153 m (MSL)
Map sheet number	: 5439 Coordination : 48 0226080 m E., 1686173 m N.

Landform

1. Physiographic position	: Flood plain
2. Surrounding landform	: Flat (nearly flat)
3. Slope on which profile site	: 1%
Land use	: Paddy field, left idle at time sampling
Annual rainfall	: Approximately 1100 mm
Mean temperature	: Approximately 27 ^{o}C
Climate	: Tropical savanna
Others	: Agricultural and salt mining

II General information on the soil

Parent material	: Alluvium over residuum derived from fine grained sedimentary rock
Drainage	: Poorly drained
Permeability	: Slow
Runoff	: Slow
Depth of ground water	: Approximately 130 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apng1	0-10	Mixed dark brown (7.5YR 3/3) 93% and brown (7.5YR 5/4) 5%, common fine prominent weak red (10R 4/4) mottles; clay; strong fine and medium subangular blocky structure; moderately sticky and moderately plastic, firm moist, slightly hard dry; very few fine variegated sands, few fine cracks; few very fine and fine vesicular pores; very few very fine and fine roots; few traces of dead roots; strongly acid (field pH 5.5); abrupt and smooth boundary to Apng2.
Apng2	10-20	Mixed brown (10YR 4/3) 68% and dark yellowish brown (10YR 4/6) 30%, common fine prominent red (2.5YR 4/8) mottles; clay; strong fine and medium semi-angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; few faint clay coats on ped faces and few faint pressure faces;

		few fine cracks; few very fine and fine vesicular and few fine dendritic tubular pores; very few very fine and fine roots; few traces of dead roots; strongly acid (field pH 5.5); clear and smooth boundary to Btng1.
Btng1	20-33	Mixed grayish brown (10YR 5/2) 63%, dark gray (10YR 4/1) 20% and light yellowish brown (10YR 6/4) 10%, common medium distinct yellowish brown (10YR 5/8) and common fine prominent yellowish red (5YR 5/8) mottles; clay; moderate fine and medium semi-angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; common faint clay coats on pore walls and few faint pressure faces; few fine cracks; very few very fine and fine vesicular and few fine simple tubular pores; practically no roots; neutral (field pH 7.0); clear and smooth boundary to Btng2.
Btng2	33-48	Mixed dark gray (10YR 4/1) 63% and dark grayish brown (2.5Y 4/2) 30%, common medium distinct olive brown (2.5Y 4/4) and common fine distinct dark yellowish brown (10YR 4/6) mottles; silty clay; moderate fine and medium angular blocky structure; moderately sticky and moderately plastic, very firm moist, very hard dry; common faint clay coats on pore walls and common pressure faces; common fine cracks; very few very fine and fine vesicular and few fine dendritic tubular pores; practically no roots; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng3.
Btng3	48-70	Gray (10YR 6/1), common very fine distinct yellowish brown (10YR 5/8) mottles; silty clay; weak coarse angular blocky and semi-massive structure; moderately sticky and moderately plastic, very firm moist, very hard dry; common faint clay coats on pore walls and common pressure faces; common fine cracks; few very fine and fine vesicular and few fine dendritic tubular pores; practically no roots; few traces of dead roots; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng4.
Btng4	70-88	Light gray (10YR 7/1), common fine distinct brownish yellow (10YR 6/8) mottles; fine sandy clay; weak coarse angular blocky and semi-massive structure; moderately sticky and moderately plastic, very firm moist, very hard dry; common faint clay coats on pore walls and common pressure faces; common fine cracks; few very fine and fine vesicular and few fine dendritic tubular pores; practically no roots; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btng5.
2Btng5	88-114	Light gray (10YR 7/1), common medium distinct brownish yellow (10YR 6/8) and common fine distinct yellow (10YR 7/8) mottles; fine sandy clay; weak coarse angular blocky and semi-massive structure; moderately sticky and moderately plastic, firm moist, hard dry; common faint clay coats on ped faces and pore walls and common faint clay bridges among sand grains; few fine cracks; few very fine and fine vesicular and few fine simple tubular pores; practically no roots; few fine silt pockets; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btng6.

2Btng6	114-135	Mixed light gray (10YR 7/2) 60% and gray (10YR 6/1) 30%, common medium distinct brownish yellow (10YR 6/8), common fine distinct yellowish brown (10YR 5/8) and common fine distinct dark gray (10YR 4/1) mottles; fine sandy clay loam; weak medium and coarse subangular blocky and semi-massive structure; slightly sticky and moderately plastic, firm moist, hard dry; common faint clay coats on ped faces and pore walls and common faint clay bridges among sand grains; very few fine cracks; few very fine and fine vesicular and few fine simple tubular pores; practically no roots; few fine silt pockets; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btng7.
2Btng7	135-156	Mixed light gray (10YR 7/2) 30% and very pale brown (10YR 7/3) 30%, many medium and coarse distinct brownish yellow (10YR 6/8) and common fine distinct yellowish brown (10YR 5/8) mottles; fine sandy loam; moderate fine and medium angular blocky structure; slightly sticky and slightly plastic, firm moist, slightly hard dry; common faint clay coats on ped faces and pore walls and few faint clay bridges among sand grains; few traces of dead roots; few very fine and fine vesicular and few fine simple tubular pores; few fine silt pockets; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btng8.
2Btng8	156-190+	Pale brown (10YR 6/3), many medium and coarse distinct yellowish brown (10YR 5/6), common fine prominent strong brown (7.5YR 4/6) and common fine distinct dark gray (10YR 4/1) mottles; fine sandy clay loam; moderate fine and medium angular blocky structure; slightly sticky and moderately plastic, firm moist, slightly hard dry; common faint clay coats on ped faces and pore walls and few faint clay bridges among sand grains; few traces of dead roots; few very fine and fine vesicular and few fine simple tubular pores; practically no roots; moderately alkaline (field pH 8.0).

Pedon 7

I Information on the site

Profile symbol : Pedon 7
Soil name : Phimai series
Classification : Typic Natraqualf
Date of examination : May 18, 2004
Described by : Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Nuttaphorn Prakongkep, Chutharmard Kaewmano, Krichsana Ramsoot and Saranya Norkaew
Location : Approximately 140 m South of Talad Kae-Phimai Road (No. 2163) at ≅ 3.95 km from Talad Kae Crossroads, Ban Tum yae, Tambon Krabuang Yai, Amphoe Phimai, Nakhon Ratchasima province
Elevation : Approximately 151 m (MSL)
Map sheet number : 5439 Coordination : 48 0226128 m E., 1686136 m N.

Landform

1. Physiographic position : Flood plain
2. Surrounding landform : Flat or almost flat
3. Slope on which profile site : <2%

Land use	: Paddy field, left idle at time sampling
Annual rainfall	: Approximately 1100 mm
Mean temperature	: Approximately 27 ^{o}C
Climate	: Tropical savanna
Others	: Agricultural and salt mining

II General information on the soil

Parent material	: Alluvium over residuum derived from fine grained sedimentary rock
Drainage	: Poorly drained
Permeability	: Slow
Runoff	: Slow
Depth of ground water	: Approximately 140 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apg1	0-18	Dark brown (7.5YR 3/2), common fine and medium prominent yellowish red (5YR 4/6) mottles; clay; strong coarse angular blocky with surface cracks structure; very sticky and very plastic, very firm moist, very hard dry; few fine cracks and common surface cracks; few very fine and fine vesicular pores; common very fine and fine and few medium roots; common traces of dead roots; moderately acid (field pH 6.0); clear and smooth boundary to Apg2.
Apg2	18-30	Dark gray (10YR 4/1), common fine prominent yellowish red (5YR 4/6) mottles; clay; strong fine and medium semi-angular blocky structure; very sticky and very plastic, very firm moist, hard dry; common faint clay coats on pore walls and common faint pressure faces; very few very fine and few fine vesicular and few fine dendritic tubular pores; few very fine and fine roots; common traces of dead roots; strongly acid (field pH 5.5); clear and smooth boundary to Btg.
Btg	42/53	Brown (10YR 5/3), common fine prominent yellowish red (5YR 4/6) mottles; clay; moderate fine and medium semi-angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; common faint clay coats on pore walls and common faint pressure faces; common fine cracks; few very fine and fine vesicular and few fine dendritic tubular pores; few very fine and fine roots; common traces of dead roots; strongly acid (field pH 5.5); clear and smooth boundary to Btng1.
Btng1	42/53-64	Dark gray (10YR 4/1), common very fine prominent strong brown (7.5YR 5/6) mottles; clay; moderate fine and medium semi-angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; common faint clay coats on pore walls and common faint pressure faces; common fine cracks; few very fine and fine vesicular and few fine dendritic tubular pores; very few very fine and fine roots; common traces of dead roots; neutral (field pH 7.0); clear and wavy boundary to Btng2.
Btng2	64-79	Mixed gray (10YR 5/1) 63% and light brownish gray (10YR 6/2) 30%, common fine and medium distinct brown (7.5YR 5/4) and common fine prominent

		yellowish red (5YR 4/6) mottles; clay; moderate fine and medium angular blocky and semi-massive structure; moderately sticky and moderately plastic, firm moist, hard dry; common distinct clay coats on ped faces and pore walls, common faint pressure faces; common fine cracks; few very fine and fine vesicular and few fine dendritic tubular pores; very few very fine and fine roots; few traces of dead roots; neutral (field pH 7.0); clear and wavy boundary to Btng3.
Btng3	79-100	Mixed light brownish gray (10YR 6/2) 50% and gray (10YR 5/1) 48%, common fine distinct yellowish brown (10YR 5/4) mottles; clay; moderate fine and medium subangular blocky structure; moderately sticky and very plastic, firm moist, hard dry; common distinct clay coats on ped faces and pore walls, common faint pressure faces; common fine cracks; few very fine and fine vesicular and few fine dendritic tubular pores; very few very fine and fine roots; few traces of dead roots; moderately alkaline (field pH 8.0); clear and wavy boundary to Btng4.
Btng4	100-124	Mixed gray (10YR 5/1) 50% and grayish brown (10YR 5/2) 45%, common medium distinct yellowish brown (10YR 5/6) mottles; silty clay; moderate fine and medium subangular blocky structure; moderately sticky and very plastic, firm moist, hard dry; common distinct clay coats on ped faces and pore walls, common faint pressure faces; common fine cracks; few very fine and common fine vesicular and few fine dendritic tubular pores; practically no roots; few traces of dead roots; moderately alkaline (field pH 8.0); clear and wavy boundary to Btng5.
Btng5	124-151	Gray (10YR 6/1), common fine and medium yellowish brown (10YR 5/8) mottles; silty clay; weak medium and coarse angular blocky and semi-massive structure; moderately sticky and moderately plastic, very firm moist, very hard dry; common faint clay coats on ped faces and pore walls; few very fine and common fine vesicular and few fine dendritic tubular pores; practically no roots; few traces of dead roots; moderately alkaline (field pH 8.0); clear and wavy boundary to 2Btng6.
2Btng6	151-176	Mixed gray (10YR 6/1) 40% and light gray (10YR 7/2) 35%, common medium and coarse distinct yellowish brown (10YR 5/8) and common fine distinct dark gray (2.5Y 4/1) mottles; silty clay; weak coarse angular blocky and semi-massive structure; moderately sticky and moderately plastic, firm moist, hard dry; common faint clay coats on ped faces and pore walls; few fine cracks; few very fine and common fine vesicular and few fine simple tubular pores; practically no roots; few traces of dead roots; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btng7.
2Btng7	176-200+	Mixed gray (10YR 6/1) 40% and light gray (10YR 7/2) 28%, many medium and coarse distinct yellowish brown (10YR 5/8) and common fine distinct dark gray (2.5Y 4/1) mottles; fine sandy clay; weak medium and coarse angular blocky structure; moderately sticky and moderately plastic, firm moist, slightly hard dry; common faint clay coats on pore walls and common faint clay bridges among sand grains; few very fine and fine vesicular and few fine simple tubular pores; practically no roots; few traces of dead roots; moderately alkaline (field pH 8.0).

Pedon 8

I Information on the site

Profile symbol	: Pedon 8
Soil name	: Phimai series
Classification	: Typic Natraqualf
Date of examination	: May 19, 2004
Described by	: Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Nuttaphorn Prakongkep, Chutharmard Kaewmano, Krichsana Ramsoot and Saranya Norkaew
Location	: Approximately 190 m South of Talad Kae-Phimai Road (No. 2163) at ≅ 4.00 km from Talad Kae Crossroads, Ban Tum yae, Tambon Krabuang Yai, Amphoe Phimai, Nakhon Ratchasima province
Elevation	: Approximately 151 m (MSL)
Map sheet number	: 5439 Coordination : 48 0226176 m E., 1686103 m N.

Landform

1. Physiographic position	: Flood plain
2. Surrounding landform	: Flat or almost flat
3. Slope on which profile site	: <2%
Land use	: Paddy rice ploughed at time sampling, *Eucalyptus sp.*
Annual rainfall	: Approximately 1100 mm
Mean temperature	: Approximately 27 ^{o}C
Climate	: Tropical savanna
Others	: Agricultural and salt mining

II General information on the soil

Parent material	: Alluvium over residuum derived from fine grained sedimentary rock
Drainage	: Poorly drained
Permeability	: Slow
Runoff	: Slow
Depth of ground water	: Approximately 145 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apg	0-11	Brown (7.5YR 4/2), common fine and medium distinct strong brown (7.5YR 4/6) mottles; clay; weak medium and coarse angular blocky and semi-massive structure; moderately sticky and moderately plastic, very firm moist, very hard dry; common cracks (vertical); few very fine and fine vesicular and few fine dendritic tubular pores; many very fine and fine and common medium roots; common traces of dead roots; moderately acid (field pH 6.0); abrupt and smooth boundary to Btg1.
Btg1	11-32	Brown (10YR 5/3), common fine distinct yellowish brown (10YR 5/6) and common fine prominent strong brown (7.5YR 5/8) mottles; clay; moderate medium and coarse semi-angular blocky partially parting to moderate medium granulas structure; moderately sticky and moderately plastic, firm moist, slightly hard dry; common faint clay coats on ped faces and pore walls , few faint pressure

		face; few fine cracks; common very fine and fine vesicular and few fine dendritic tubular pores; common very fine and fine roots; many traces of dead roots; moderately acid (field pH 6.0); clear and smooth boundary to Btg2.
Btg2	32-56	Dark grayish brown (2.5Y 4/2), common fine and medium distinct light olive brown (2.5Y 5/6) mottles; clay; moderate medium and coarse semi-angular blocky partially parting to moderate medium granulas structure; very sticky and very plastic, firm moist, slightly hard dry; common faint clay coats on ped faces and pore walls, few faint pressure faces; common fine cracks; common very fine and few fine vesicular and few fine dendritic tubular pores; very few very fine and fine roots; few traces of dead roots; neutral (field pH 7.0); clear and smooth boundary to Btng1.
Btng1	56-65/85	Mixed light olive brown (2.5Y 5/3) 68% and light yellowish brown (2.5Y 6/3) 30%, moderate fine faint light yellowish brown (2.5Y 6/4) mottles; silty clay; moderate medium and coarse semi-angular blocky partially parting to moderate medium granulas structure; very sticky and very plastic, firm moist, slightly hard dry; common faint clay coats on ped faces and pore walls and few faint pressure faces; common fine cracks, large slickensides across half of the horizon; common very fine, few fine vesicular and few fine dendritic tubular pores; very few very fine and fine roots; few traces of dead roots; moderately alkaline (field pH 8.0); clear and wavy boundary to Btng2.
Btng2	85-110	Gray (10YR 6/1), common medium prominent light yellowish brown (2.5Y 6/4) mottles; clay; moderate fine and medium angular blocky structure; very sticky and moderately plastic, firm moist, hard dry; common faint clay coats on ped faces and pore walls and few faint pressure faces; common fine cracks, large slickensides across half of the horizon; few very fine and fine vesicular and few fine dendritic tubular pores; very few very fine and fine roots; few traces of dead roots; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng3.
Btng3	110-124	Mixed gray (2.5Y 5/1) 65% and light brownish gray (2.5Y 6/2) 30%, common medium distinct olive yellow (2.5Y 6/6) mottles; silty clay; moderate medium and coarse angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; common faint clay coats on ped faces and pore walls and few faint pressure faces; common fine cracks, large slickensides across half of the horizon; few very fine and fine vesicular and few fine dendritic tubular pores; practically no roots; moderately alkaline (field pH 8.0); abrupt and smooth boundary to 2Btng4.
2Btng4	124-152	Light gray (2.5Y 7/1), many medium and coarse distinct olive yellow (2.5Y 6/6) and few very fine prominent yellowish red (5YR 4/6) mottles; clay; weak coarse angular blocky and semi-massive structure; moderately sticky and moderately plastic, firm moist, hard dry; few faint clay coats on pore walls and common faint pressure faces; common fine cracks, large slickensides across half of the horizon; few very fine and very few fine vesicular pores; practically no roots; moderately alkaline (field pH 8.0); gradual and smooth boundary to 2Btng5.

2Btng5	152-180+	Light gray (2.5Y 7/1), many medium and coarse prominent olive yellow (2.5Y 6/6) and few fine prominent yellowish red (5YR 4/6) mottles; clay; weak coarse angular blocky and semi-massive structure; moderately sticky and moderately plastic, firm moist, hard dry; few faint clay coats on pore walls and common faint pressure faces; common fine cracks, large slickensides across half of the horizon; few very fine and very few fine vesicular pores; practically no roots; moderately alkaline (field pH 8.0).

Pedon 9

I Information on the site

Profile symbol : Pedon 9
Soil name : Phimai series
Classification : Typic Endoaqualf
Date of examination : May 19, 2004
Described by : Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Nuttaphorn Prakongkep, Chutharmard Kaewmano, Krichsana Ramsoot and Saranya Norkaew
Location : Approximately 240 m South of Talad Kae-Phimai Road (No. 2163) at ≅ 4.05 km from Talad Kae Crossroads, Ban Tum yae, Tambon Krabuang Yai, Amphoe Phimai, Nakhon Ratchasima province
Elevation : Approximately 151 m (MSL)
Map sheet number : 5439 Coordination : 48 0226230 m E., 1686066 m N.

Landform

1. Physiographic position : Flood plain
2. Surrounding landform : Flat or almost flat
3. Slope on which profile site : <2%

Land use : Paddy field, ploughed at time sampling, *Eucalyptus sp.*
Annual rainfall : Approximately 1100 mm
Mean temperature : Approximately 27 °C
Climate : Tropical savanna
Others : Agricultural and salt mining

II General information on the soil

Parent material : Alluvium over residuum derived from fine grained sedimentary rock
Drainage : Poorly drained
Permeability : Slow
Runoff : Slow
Depth of ground water : Approximately 110 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apg1	0-10	Brown (10 YR 4/3), common fine and medium prominent red (2.5YR 4/8) mottles; clay loam; moderate medium and coarse subangular blocky structure; moderately sticky and moderately plastic, firm moist, slightly hard dry; common very fine, few fine and medium vesicular pores; common very fine, fine and medium roots; few traces of dead roots; strongly acid (field pH 5.5); clear and smooth boundary to Apg2.
Apg2	10-22	Dark grayish brown (10YR 4/2), common fine and medium distinct strong brown (7.5YR 5/8) and common fine prominent yellowish red (5YR 4/6) mottles; clay; strong medium and coarse angular blocky structure; moderately sticky moderately plastic, firm moist, hard dry; few faint clay coats on pore walls; few faint pressure faces; few very fine, fine and medium vesicular and few fine dendritic tubular pores; few very fine and fine roots; few traces of dead roots; moderately acid (field pH 6.0); clear and smooth boundary to Btg1.
Btg1	22-38	Mixed brown (7.5YR 4/3) 45%, dark grayish brown (10YR 4/2) 30% and light brown (7.5YR 6/3) 10%, common fine distinct yellowish brown (10YR 5/8) mottles; clay; moderate fine and medium angular blocky structure; moderately sticky and moderately plastic, firm moist, slightly hard dry; common faint clay coats on ped faces and pore walls; common variegated sands, few fine cracks; few very fine and common fine vesicular and few fine dendritic tubular pores; few very fine and fine roots; common traces of dead roots; moderately acid (field pH 6.0); clear and smooth boundary to Btg2.
Btg2	38-60	Mixed brown (10YR 5/3) 65% and gray (10YR 5/1) 30%, common fine distinct dark yellowish brown (10YR 4/6) mottles; clay; moderate fine and medium angular blocky structure; moderately sticky and moderately plastic, firm moist, slightly hard dry; common faint clay coats on ped faces and pore walls , common faint pressure faces few fine cracks; common very fine, fine and medium vesicular pores; very few very fine and fine roots; common traces of dead roots; moderately acid (field pH 6.0); clear and smooth boundary to Btg3.
Btg3	60-83	Gray (10YR 6/1), common fine distinct yellow (10YR 7/8) and common very fine prominent yellowish red (5YR 5/8) mottles; silty clay; moderate fine and medium angular blocky structure; moderately sticky and moderately plastic, very firm moist, hard dry; common faint clay coats on ped faces and pore walls, common faint pressure faces, common fine cracks; few very fine and fine vesicular pores; very few very fine and fine roots; common traces of dead roots; neutral (field pH 7.0); clear and smooth boundary to Btg4.
Btg4	83-102	Mixed light yellowish brown (2.5Y 6/3) 65% and brown (7.5YR 4/2) 10%, common medium and coarse distinct yellow (2.5Y 7/6) and common fine distinct olive yellow (2.5Y 6/8) mottles; clay; moderate medium and coarse angular blocky structure; moderately sticky and moderately plastic, very firm moist, hard dry; common faint clay coats on ped faces and pore walls, common faint pressure

		faces, common fine cracks; few very fine, common fine vesicular and few fine simple and dendritic tubular pores; very few very fine and fine roots; few traces of dead roots; moderately alkaline (field pH 8.0); abrupt and smooth boundary to 2Btg5.
2Btg5	102-121	Light brownish gray (2.5Y 6/2), many medium and coarse prominent olive yellow (2.5Y 6/8) and common fine prominent strong brown (7.5YR 4/6) mottles; fine sandy clay; moderate fine and medium angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; few faint clay coats on pore walls, few faint pressure faces, common fine cracks; few very fine , common fine vesicular and few fine simple and dendritic tubular pores; practically no roots; few iron and aluminum oxide concretion, common traces of dead roots; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btg6.
2Btg6	121-140	Light gray (2.5Y 7/1), many medium and coarse prominent yellowish brown (10YR 5/6) and common medium distinct brownish yellow (10YR 6/8) mottles; fine sandy clay loam; moderate fine and medium angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; few fine cracks; few very fine and common fine vesicular and few fine simple and dendritic tubular pores; practically no roots; few iron and aluminum oxide concretion, common traces of dead roots; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btg7.
2Btg7	140-162	Mixed gray (10YR 6/1) 15% and light gray (10YR 7/2) 10%, many coarse prominent brownish yellow (10YR 6/8), common fine and medium distinct dark yellowish brown (10YR 4/6) and common fine prominent dark gray (10YR 4/1) mottles; fine sandy clay loam; moderate medium and coarse angular blocky structure; moderately sticky and slightly plastic, firm moist, hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; few very fine and fine vesicular and few fine simple tubular pores; practically no roots; few traces of dead roots and manganese oxide soft accumulation; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btg8.
2Btg8	162-190+	Mixed Pale yellow (2.5Y 7/4) 20% and very pale brown (10YR 7/3) 5%, many fine and medium prominent dark yellowish brown (10YR 4/6), common medium and coarse prominent yellowish brown (10YR 5/8) and common fine prominent dark gray (10YR 4/1) mottles; fine sandy clay loam; moderate medium and coarse angular blocky structure; slightly sticky and slightly plastic, slightly firm moist, slightly hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; few very fine and fine vesicular and few fine simple tubular pores; practically no roots; few traces of dead roots and manganese oxide soft accumulation; moderately alkaline (field pH 8.0).

Pedon 10

I Information on the site

Profile symbol	: Pedon 10
Soil name	: Phimai series
Classification	: Typic Natraqualf
Date of examination	: May 19, 2004
Described by	: Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Nuttaphorn Prakongkep, Chutharmard Kaewmano, Krichsana Ramsoot and Saranya Norkaew
Location	: Approximately 280 m South of Talad Kae-Phimai Road (No. 2163) at ≅ 4.10 km from Talad Kae Crossroads, Ban Tum yae, Tambon Krabuang Yai, Amphoe Phimai, Nakhon Ratchasima province
Elevation	: Approximately 152 m (MSL)
Map sheet number	: 5439 Coordination : 48 0226289 m E., 1686032 m N.

Landform

1. Physiographic position	: Flood plain
2. Surrounding landform	: Flat or almost flat
3. Slope on which profile site	: <2%
Land use	: Paddy field, ploughed at time sampling, *Eucalyptus sp.*
Annual rainfall	: Approximately 1100 mm
Mean temperature	: Approximately 27 ^{o}C
Climate	: Tropical savanna
Others	: Agricultural and salt mining

II General information on the soil

Parent material	: Alluvium over residuum derived from fine grained sedimentary rock
Drainage	: Poorly drained
Permeability	: Slow
Runoff	: Slow
Depth of ground water	: Approximately 210 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apg	0-16	Brown (10YR 5/3), common fine prominent yellowish red (5YR 5/6) mottles; clay; moderate fine and medium subangular blocky structure; moderately sticky and moderately plastic, firm moist, slightly hard dry; few faint clay coats on pore walls; common surface cracks; common very fine and fine vesicular pores; many very fine, fine and medium roots; common traces of dead roots; strongly acid (field pH 5.5); abrupt and smooth boundary to Btg1.
Btg1	16-31	Dark grayish brown (10YR 4/2), common fine prominent yellowish red (5YR 4/6) mottles; clay; moderate fine and medium semi-angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; common faint clay coats on pore walls; common fine cracks; common very fine and fine vesicular and few fine simple tubular pores; few very fine and fine roots; few traces of dead roots; very strongly acid (field pH 5.0); clear and smooth boundary to Btg2.

Btg2	31-52	Grayish brown (10YR 5/2), common fine prominent yellowish red (5YR 4/6) and common fine prominent pinkish gray (7.5YR 6/2) mottles; clay; moderate fine and medium semi-angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; common faint clay coats on ped faces and pore walls; few fine cracks; common very fine and fine vesicular and few fine simple and dendritic tubular pores; few very fine and fine roots; common traces of dead roots; very strongly acid (field pH 5.0); clear and smooth boundary to Btg3.
Btg3	52-69	Grayish brown (10YR 5/2), common fine prominent red (2.5YR 5/8), common fine prominent reddish yellow (7.5 YR 6/8) and few fine and medium prominent yellowish red (5YR 5/6) mottles; clay; moderate medium and coarse angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; common faint clay coats on ped faces and pore walls; few fine cracks; common very fine and fine vesicular and few fine simple and dendritic tubular pores; few very fine and fine roots; few traces of dead roots; strongly acid (field pH 5.5); clear and smooth boundary to Btg4.
Btg4	69-95	Mixed dark grayish brown (10YR 4/2) 68% and grayish brown (10YR 5/2) 30%, common fine prominent strong brown (7.5YR 5/8) mottles; clay; strong medium and coarse angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on ped faces and pore walls, few faint pressure faces, few fine cracks; few very fine and fine vesicular and fine dendritic tubular pores; few very fine and fine roots; slightly acid (field pH 6.5); clear and smooth boundary to 2Btng1.
2Btng1	95-128	Grayish Brown (2.5Y 5/2), common fine and medium distinct olive yellow (2.5Y 6/6); clay; moderate fine and medium semi-angular blocky structure; slightly sticky and moderately plastic, firm moist, hard dry; common faint clay coats on ped faces and pore walls, few faint pressure faces, few fine cracks; very few very fine and few fine vesicular pores; practically no roots; few traces of dead roots; neutral (field pH 7.0); clear and smooth boundary to 2Btng2.
2Btng2	128-161	Mixed light brownish gray (2.5Y 6/2) 70% and light yellowish brown (2.5Y 6/4) 10%, common medium distinct olive yellow (2.5Y 6/6) mottles; clay; weak coarse angular blocky and semi-massive structure; slightly sticky and moderately plastic, firm moist, hard dry; common distinct clay coats on ped faces and pore walls; common fine cracks; few very fine and fine vesicular and fine dendritic tubular pores; practically no roots; few traces of dead roots; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btng3.
2Btng3	161-187	Mixed light gray (2.5Y 7/1) 30% and light yellowish brown (2.5Y 6/4) 30%, many fine and medium prominent brownish yellow (10YR 6/8) mottles; clay; moderate medium and coarse semi-angular blocky structure; slightly sticky and moderately plastic, firm moist, hard dry; common distinct clay coats on ped faces and pore walls; common cracks of various sizes; few very fine and fine vesicular and fine dendritic tubular pores; practically no roots; few traces of dead roots; moderately alkaline (field pH 8.0); gradual and smooth boundary to 2Btng4.

2Btng4	187-210+	Mixed pale brown (2.5Y 7/4) 30% and light gray (2.5Y 7/1) 15%, many coarse and medium prominent olive yellow (2.5Y 6/8) and common coarse and medium prominent brownish yellow (10YR 6/8) mottles; clay; weak coarse angular blocky and semi-massive structure; slightly sticky and moderately plastic, firm moist, hard dry; few distinct clay coats on ped faces and pore walls; common fine cracks; few very fine and fine vesicular and few fine dendritic tubular pores; practically no roots; strongly alkaline (field pH 8.5).

Location 3 (Sandy over clayey textures salt affected soils)

Pedon 11

I Information on the site

Profile symbol	: Pedon 11
Soil name	: Kula Ronghai series
Classification	: Typic Natraqualf
Date of examination	: December 15, 2004
Described by	: Irb Kheoruenromne, Napaporn Wongpokhom, Saowanuch Tawornpruek, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Supaluk Srithilertcharoen
Location	: Approximately 50 m East of Suwanaphume-Tha Tum Road (No. 214) at 9.90 km from Suwanaphume Crossroads, Ban Don Phiman, Tambon Sra Ku, Amphoe Suwanaphume, Roi-Et province
Elevation	: Approximately 116 m (MSL)
Map sheet number	: 5740 II Coordination : 48 0372031 m E., 1717235 m N.

Landform

1. Physiographic position	: Erosional plain
2. Surrounding landform	: Flat
3. Slope on which profile site	: 2%
Land use	: Paddy rice (KDML 105)/Eucalyptus
Annual rainfall	: Approximately 1300 mm
Mean temperature	: Approximately 26 ^{o}C
Climate	: Tropical savanna
Others	: Agricultural

II General information on the soil

Parent material	: Wash over residuum derived from clastic sedimentary rock (siltstone)
Drainage	: Poorly drained
Permeability	: Slow
Runoff	: Slow
Depth of ground water	: More than 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apg	0-15/23	Light brownish gray (10YR 6/2), common fine distinct yellowish brown (10YR 5/6) mottles; slightly gravelly sandy loam; moderate weak fine and medium subangular blocky structure; slightly sticky and slightly plastic, friable moist, slightly hard dry; few iron-manganese oxides nodules and concretion; few fine and medium vesicular pores; many very fine and fine roots; few traces of dead roots; strongly acid (field pH 5.5); abrupt and wavy boundary to Bcg.
Bcg	23-46	Light gray (10YR 7/1), common fine and medium distinct black (10YR 2/1) and common fine distinct brownish yellow (10YR 6/8) mottles; slightly gravelly fine sandy clay; massive structure; very sticky and very plastic, very firm moist, very hard dry; very few very fine variegated sands; very few very fine vesicular pores;

		few very fine and fine and medium roots; abundant iron-manganese nodules and concretion in some parts; moderately alkaline (field pH 8.0); gradual and smooth boundary to Btg1.
Btg1	46-65	Light gray (10YR 7/1), common fine and medium prominent yellow (2.5Y 7/8) mottles; fine sandy clay; weak coarse angular blocky structure (semi-massive); very sticky and very plastic, very firm moist, very hard dry; few faint clay coats on pore walls; few very fine variegated sands, few pressure faces; few fine and medium vesicular pores; very few fine and few medium roots; few fine cracks; moderately alkaline (field pH 8.0); clear and smooth boundary to Btg2.
Btg2	65-88	Light gray (10YR 7/2), common medium prominent yellow (2.5Y 7/8) mottles; fine sandy clay; weak coarse angular blocky structure (semi-massive); very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on pore walls; few very fine variegated sands, few pressure faces; few fine and medium vesicular pores; very few fine and medium roots; few fine cracks; moderately alkaline (field pH 8.0); clear and smooth boundary to Btg3.
Btg3	88-113	Light gray (2.5Y 7/1), common coarse prominent brownish yellow (10YR 6/8) and common medium prominent dark red (10R 3/6) mottles; fine sandy clay; moderate fine and medium angular blocky structure; very sticky and very plastic, firm moist, very hard dry; common faint clay coats on pore walls; few very fine variegated sands, few pressure faces; few fine variegated sands; few very fine and fine vesicular and simple tubular pores; particular no roots; few fine cracks; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btng1.
2Btng1	113-140	Light gray (10YR 7/2), many coarse distinct brownish yellow (10YR 6/8) and common medium prominent dark red (10R 3/6) mottles; sandy clay; moderate medium and coarse semi angular blocky structure; slightly sticky and moderately plastic, firm moist, hard dry; common faint clay coats on pore walls and few faint clay bridges among sand grains; few very fine, common fine vesicular and few fine tubular pores; particular no roots; few fine cracks; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btng2.
2Btng2	140-172	Light gray (10YR 7/2), common coarse distinct brownish yellow (10YR 6/8) and common medium prominent dark red (10R 3/6) mottles; sandy clay; moderate medium and coarse semi angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; few faint clay coats on pore walls and many faint clay bridges among sand grains; few very fine, common fine vesicular and few fine tubular pores; particular no roots; few fine cracks; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btng3.
2Btng3	170-205+	Light gray (10YR 7/2), common coarse distinct brownish yellow (10YR 6/8) and common medium prominent dark red (10R 3/6) mottles; sandy clay; moderate fine and medium semi angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; few faint clay coats on pore walls and many faint clay bridges among sand grains; few very fine, common fine vesicular and few fine tubular pores; particular no roots; few iron oxides slightly hard nodules; moderately alkaline (field pH 8.0).

Pedon 12

I Information on the site

Profile symbol	: Pedon 12
Soil name	: Kula Ronghai series
Classification	: Typic Natraqualf
Date of examination	: December 16, 2004
Described by	: Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Saowanuch Tawornpruek, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Supaluk Srithilertcharoen
Location	: Approximately 110 m East of Suwanaphume-Tha Tum Road (No. 214) at 9.90 km from Suwanaphume Crossroads, Ban Don Phiman, Tambon Sra Ku, Amphoe Suwanaphume, Roi-Et province
Elevation	: Approximately 117 m (MSL)
Map sheet number	: 5740 II Coordination : 48 0372074 m E., 1717206 m N.

Landform

1. Physiographic position	: Erosional plain
2. Surrounding landform	: Flat
3. Slope on which profile site	: 1%
Land use	: Paddy rice (KDML 105)/Eucalyptus
Annual rainfall	: Approximately 1300 mm
Mean temperature	: Approximately 26 ^{o}C
Climate	: Tropical savanna
Others	: Agricultural

II General information on the soil

Parent material	: Wash over residuum derived from clastic sedimentary rock
Drainage	: Poorly drained
Permeability	: Slow
Runoff	: Slow
Depth of ground water	: More than 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apg	0-19/20	Mixed gray (10YR 5/1) 60% and brown (7.5YR 5/3) 38%, common fine distinct brownish yellow (10YR 6/8) mottles; fine sandy loam; moderate weak fine and medium semi-angular blocky structure; slightly sticky and slightly plastic, friable moist, slightly hard dry; very fine very few variegated sands; common very fine and fine vesicular and very few fine simple tubular pores; many very fine and fine roots; few traces of dead roots; moderately acid (field pH 6.0); clear and smooth boundary to Apng.
Apng	20-27/32	Mixed pink (7.5YR 7/4) 95% and gray (7.5YR 5/1) 3%, common fine distinct reddish yellow (7.5YR 6/8) mottles; fine sandy loam (loamy fine sand); moderate weak fine and medium semi-angular blocky structure; non sticky and non plastic, vary friable moist, slightly hard dry; very fine very few variegated sands and few fine cracks; common very fine and fine vesicular and very few fine simple tubular

		pores; few very fine and fine roots; few iron-manganese oxides nodules and concretion; moderately acid (field pH 6.0); abrupt and wavy boundary to Bcg.
Bcg	32-54/63	Mixed light gray (10YR 7/2) 40% and (10YR 7/1) 35%, pinkish gray (7.5YR 6/2) 10% and reddish yellow shifted sands (5YR 6/6) 5%, common fine and medium distinct gray (10YR 5/1) and black manganese oxide (10YR 2/1) mottles; slightly gravelly fine sandy clay; massive structure; very sticky and very plastic, vary firm moist, very hard dry; few fine faint clay coat on pore walls; common vertical cracks and common iron-manganese concretions and nodules; very few very fine and fine vesicular and few fine simple vertical tubular pores; very few very fine and fine roots; common translocates fine sands in cracks and vertical tubular pores; moderately alkaline (field pH 8.0); abrupt and broken boundary to Btg1.
Btg1	63-82/87	Mixed light gray (10YR 7/2) 70% and (7.5YR 7/1) 10%, pinkish gray (7.5YR 7/2) 10% and light reddish brown shifted sands (5YR 6/4) 5%, common fine prominent light red (2.5YR 6/6) mottles; fine sandy clay; weak coarse angular blocky (semi-massive) structure; very sticky and very plastic, vary firm moist, very hard dry; common faint clay coat on pore walls; few faint pressure faces and few fine variegated sands; very few very fine and few fine vesicular and few fine simple tubular pores; practically no roots; few traces of dead roots; moderately alkaline (field pH 8.0); clear and wavy boundary to Btg2.
Btg2	87-111/114	Mixed light gray (10YR 7/2) 58% and (10YR 7/1) 20% and light reddish brown shifted sands (5YR 6/4) 2%, common medium and coarse distinct brownish yellow (10YR 6/8) and common medium distinct yellowish brown (10YR 5/8) mottles; fine sandy clay; weak coarse angular blocky (semi-massive) structure; very sticky and very plastic, vary firm moist, very hard dry; common faint clay coat on pore walls and along smooth crack surface; very few large iron oxides semi-hardened nodules; very few very fine and few fine vesicular and few fine simple tubular pores; practically no roots; common fine cracks; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btg3.
2Btg3	114-137	Mixed light gray (10YR 7/2) 63% and (10YR 7/1) 10%, common medium and coarse distinct yellowish brown (10YR 5/8), common medium prominent red (2.5YR 4/6) and common medium distinct dark gray manganese oxide (10YR 4/1) mottles; silty clay (very fine sandy clay); moderate medium and coarse semi-angular blocky structure; very sticky and very plastic, vary firm moist, very hard dry; common faint clay coat on pore walls; few iron-oxides impregnated nodules and very few fine variegated sands; very few very fine and few fine vesicular and few fine simple tubular pores; practically no roots; common fine and medium cracks; strongly alkaline (field pH 8.5); gradual and smooth boundary to 2Btg4.
2Btg4	137-155	Mixed light gray (10YR 7/2) 62% and (10YR 7/1) 5%, many medium and coarse distinct yellowish brown (10YR 5/8), common medium and coarse prominent olive yellow (2.5Y 6/6) and common fine and medium prominent red (10R 4/8) mottles; very fine sandy clay; moderate medium and coarse semi-angular blocky structure; moderately sticky and very plastic, firm moist, hard dry; common faint clay coat on pore walls; very few iron-oxides impregnated nodules; very few very

		fine and fine vesicular and very few fine tubular pores; practically no roots; common fine cracks; strongly alkaline (field pH 8.5); clear and smooth boundary to 2Btng1.
2Btng1	155-183	Light gray (10YR 7/2), common medium and coarse distinct yellowish brown (10YR 5/8) and brownish yellow (10YR 6/8) and common fine and medium prominent red (10R 4/8) and (10R 5/8) mottles; fine (very fine) sandy clay; moderate medium and coarse semi-angular blocky structure; moderately sticky and very plastic, firm moist, hard dry; common faint clay coat on pore walls; very few iron-oxides impregnated nodules and evidence of translocated sands along vertical crack; very few very fine and fine vesicular and very few fine tubular pores; practically no roots; common fine cracks; strongly alkaline (field pH 8.5); gradual and smooth boundary to 2Btng2.
2Btng2	183-207+	Light gray (10YR 7/2), many medium and coarse distinct yellowish brown (10YR 5/8), many medium and coarse prominent red (10R 5/8) and common medium distinct dark yellowish brown (10YR 4/8) mottles; fine sandy clay; moderate medium and coarse semi-angular blocky structure; moderately sticky and very plastic, firm moist, hard dry; common faint clay coat on pore walls; evidence of translocated sands along vertical crack; very few very fine and fine vesicular and few fine simple tubular pores; practically no roots; common fine cracks; strongly alkaline (field pH 8.5).

Pedon 13

I Information on the site

Profile symbol : Pedon 13
Soil name : Kula Ronghai series
Classification : Typic Endoaqualf
Date of examination : December 16, 2004
Described by : Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Saowanuch Tawornpruek, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Supaluk Srithilertcharoen
Location : Approximately 170 m East of Suwanaphume-Tha Tum Road (No. 214) at 9.90 km from Suwanaphume Crossroads, Ban Don Phiman, Tambon Sra Ku, Amphoe Suwanaphume, Roi-Et province
Elevation : Approximately 118 m (MSL)
Map sheet number : 5740 II Coordination : 48 0372127 m E., 1717176 m N.

Landform

1. Physiographic position : Erosional plain
2. Surrounding landform : Flat
3. Slope on which profile site : 2%

Land use : Paddy rice (KDML 105)/Eucalyptus
Annual rainfall : Approximately 1300 mm
Mean temperature : Approximately 26 ^{o}C
Climate : Tropical savanna
Others : Agricultural

II General information on the soil

Parent material	: Wash over residuum derived from clastic sedimentary rock
Drainage	: Poorly drained
Permeability	: Slow
Runoff	: Slow
Depth of ground water	: More than 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apg1	0-18	Mixed light yellowish brown (10YR 6/4) 60% and gray (10YR 5/1) 38%, common fine distinct dark yellowish brown (10YR 4/4) mottles; sandy loam; moderate weak fine and medium angular blocky structure; slightly sticky and slightly plastic, friable moist, slightly hard dry; few very fine, common fine vesicular and few fine simple tubular pores; many very fine and fine and medium roots; few traces of dead roots; moderately acid (field pH 6.0); clear and smooth boundary to Apg2.
Apg2	18-30	Mixed reddish yellow (7.5YR 6/6) 83% and brown (7.5YR 5/2) 15%, common fine distinct brownish yellow (10YR 6/8) mottles; loamy sand; moderate weak fine and medium angular blocky structure; slightly sticky and non plastic, vary friable moist, slightly hard dry; few fine variegated sands; common fine vesicular and few fine simple tubular pores; few very fine and fine roots; few hardened iron-manganese oxides nodules; slightly acid (field pH 6.5); abrupt and smooth boundary to Btg1.
Btg1	30-48	Light gray (10YR 7/2), common medium prominent weak red (10R 4/4) and common fine distinct yellowish brown (10YR 5/6) mottles; very fine sandy clay; strong coarse prismatic and columnar structure; very sticky and very plastic, vary firm moist, very hard dry; common fine faint clay coat on pore walls; common variegated sands and few fine iron-manganese nodules; very few very fine and common fine vesicular and fine simple and dendritic tubular pores; very few very fine and fine roots; few traces of dead roots; slightly acid (field pH 6.5); clear and smooth boundary to Btg2.
Btg2	48-73	Light gray (10YR 7/1), common coarse prominent weak red (10R 4/4) mottles; silty clay; strong coarse prismatic and columnar structure; moderately sticky and moderately plastic, vary firm moist, very hard dry; common faint clay coat on ped faces and pore walls; common pressure faces and few fine cracks; very few very fine, few fine vesicular and very fine simple tubular pores; very few very fine and fine roots; common traces of dead roots; slightly acid (field pH 6.5); clear and smooth boundary to Btg3.
Btg3	73-91	Light gray (10YR 7/1), common coarse prominent dark yellowish brown (10YR 4/6), common fine prominent red (2.5YR 4/6) and black manganese oxides (2.5Y 2.5/1) mottles; fine sandy clay; strong coarse prismatic and columnar structure; moderately sticky and moderately plastic, very firm moist, very hard dry;

		common faint clay coat on ped faces and pore walls; few pressure faces and common fine cracks; very few very fine vesicular and fine simple and dentritic tubular pores; practically no roots; common traces of dead roots and few iron-manganese and iron oxides nodules; slightly acid (field pH 6.5); clear and smooth boundary to Btg4.
2Btg4	91-188	Light gray (10YR 7/1), common fine and medium prominent red (2.5YR 4/6), common coarse prominent yellowish brown (10YR 5/8), common fine prominent black dead root (10YR 2/1) and very dark gray manganese oxides (2.5Y 3/1) mottles; silty clay (very fine sandy clay); strong medium and coarse semi-angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coat on ped faces and pore walls; common iron-oxides impregnated soft nodules; very few very fine and common fine vesicular and few fine tubular pores; practically no roots; common traces of dead roots and few iron-manganese and iron oxides nodules; slightly acid (field pH 6.5); gradual and smooth boundary to 2Btg5.
2Btg5	118-150	Mixed light gray (10YR 7/1) 40% and (10YR 7/2) 20%, many coarse prominent yellowish brown (10YR 5/8), common medium prominent red (2.5YR 4/6), common fine prominent black dead roots (10YR 2/1) and very dark gray manganese oxides (2.5Y 3/1) mottles; very fine sandy clay; moderate medium and coarse semi-angular blocky structure; moderately sticky and very plastic, firm moist, hard dry; common faint clay coat on ped faces and pore walls; common iron-oxides impregnated soft nodules and few pressure faces; very few very fine and few fine vesicular and fine simple and dendritic tubular pores; practically no roots; common traces of dead roots; moderately acid (field pH 6.0); gradual and smooth boundary to 2Btg6.
2Btg6	150-185	Light gray (10YR 7/2), common coarse distinct yellowish brown (10YR 5/6), common medium prominent dark red (2.5YR 4/8), common coarse prominent yellowish brown (10YR 5/8) and common fine prominent black dead roots (10YR 2/1) and very dark gray manganese oxides (2.5Y 3/1) mottles; very fine sandy clay; moderate medium and coarse semi-angular blocky structure; moderately sticky and very plastic, very firm moist, very hard dry; common faint clay coat on ped faces and pore walls; few patches of pink sands and common impregnated; very few very fine and few fine vesicular and fine simple and dendritic tubular pores; practically no roots; common traces of dead roots; slightly acid (field pH 6.5); gradual and smooth boundary to 2Btg7.
2Btg7	185-210+	Very pale brown (10YR 7/3), many coarse prominent yellowish red (5YR 4/6), common coarse prominent yellowish brown (10YR 5/6), common medium prominent brownish yellow (10YR 6/8) and common fine prominent red (10R 4/6) mottles; very fine sandy clay; moderate medium and coarse semi-angular blocky structure; moderately sticky and very plastic, very firm moist, very hard dry; common faint clay coat on ped faces and pore walls; common iron-manganese impregnated spots in the matrix; very few very fine and few fine vesicular and simple tubular pores; practically no roots; common brisht red spots in the iron oxides impregnated spots; moderately acid (field pH 6.0).

Pedon 14

I Information on the site

Profile symbol	: Pedon 14
Soil name	: Kula Ronghai series
Classification	: Typic Natraqualf
Date of examination	: December 16, 2004
Described by	: Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Saowanuch Tawornpruek, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Supaluk Srithilertcharoen
Location	: Approximately 230 m East of Suwanaphume-Tha Tum Road (No. 214) at 9.90 km from Suwanaphume Crossroads, Ban Don Phiman, Tambon Sra Ku, Amphoe Suwanaphume, Roi-Et province
Elevation	: Approximately 119 m (MSL)
Map sheet number	: 5740 II Coordination : 48 0372173 m E., 1717144 m N.

Landform

1. Physiographic position	: Erosional plain
2. Surrounding landform	: Flat
3. Slope on which profile site	: 2%
Land use	: Paddy rice (KDML 105)/Eucalyptus
Annual rainfall	: Approximately 1300 mm
Mean temperature	: Approximately 26 ^{o}C
Climate	: Tropical savanna
Others	: Agricultural

II General information on the soil

Parent material	: Wash over residuum derived from clastic sedimentary rock
Drainage	: Poorly drained
Permeability	: Slow
Runoff	: Slow
Depth of ground water	: More than 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apg	0-28	Mixed light brownish gray (10YR 6/2) 60% and pale brown (10YR 6/3) 38%, common fine distinct dark yellowish brown (10YR 4/6) mottles; fine sandy loam; moderate weak fine and medium subangular blocky structure; slightly sticky and slightly plastic, very friable moist, slightly hard dry; very few variegated sands; common very fine and fine vesicular and few fine simple tubular pores; many very fine and fine roots; few traces of dead roots; slightly acid (field pH 6.5); clear and smooth boundary to Bng.
Bng	28-44	Mixed very pale brown (10YR 7/3) 50% and light gray (10YR 7/2) 40%, common fine distinct yellowish brown (10YR 5/4), very dark gray dead roots (10YR 3/1) and common fine prominent black manganese oxides (2.5Y 2.5/1) mottles; sandy loam; moderate fine and medium semi-angular blocky structure; slightly sticky and slightly plastic, slightly firm moist, slightly hard dry; few faint

		clay coats on pore walls; few variegated sands; few very fine and common fine vesicular and few fine simple tubular pores; few very fine and fine roots; few iron-manganese nodules; neutral (field pH 7.0); abrupt and smooth boundary to Bcg.
Bcg	44-66	Light gray (10YR 7/1), common fine and medium prominent black manganese oxides (2.5Y 2.5/1), common fine prominent brownish yellow (10YR 6/8) and dark red (2.5YR 3/6) and few fine distinct yellowish brown roots mottle (10YR 5/4) mottles; slightly gravelly sandy clay; strong prismatic and columnar structure; very sticky and very plastic, very firm moist, very hard dry; many faint clay coats on pore walls and ped faces; few faint pressure faces and few fine cracks; very few very fine and common fine vesicular and simple tubular pores; very few very fine and fine roots; common iron-manganese oxides nodules; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng1.
Btng1	66-85	Light gray (10YR 7/2), common fine and medium prominent red (2.5YR 4/6), common fine prominent yellowish brown (10YR 5/8) and common fine distinct very dark gray manganese oxides (10YR 3/1) mottles; gravelly sandy clay; strong prismatic and columnar structure; very sticky and very plastic, very firm moist, very hard dry; many faint clay coats on pore walls and ped faces; few faint pressure faces and few fine cracks; very few very fine and common fine vesicular and simple tubular pores; very few very fine and fine roots; common iron-manganese oxides nodules; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng2.
Btng2	85-110	Light gray (10YR 7/2), common medium and coarse prominent brownish yellow (10YR 6/8) and common fine and medium prominent yellowish red (5YR 4/6) mottles; slightly gravelly sandy clay; weak coarse angular blocky (semi-massive) structure; moderately sticky and very plastic, very firm moist, very hard dry; common faint clay coats on ped faces and pore walls; few very fine variegated sands; very few very fine and fine and few medium vesicular and few fine simple tubular pores; very few very fine and fine roots; few iron-manganese oxides concretion; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng3.
Btng3	110-137	Mixed light gray (10YR 7/2) 55% and very pale brown (10YR 7/3) 30%, common medium and coarse prominent brownish yellow (10YR 6/8) mottles; fine sandy clay; weak coarse angular blocky (semi-massive) structure; moderately sticky and moderately plastic, very firm moist, very hard dry; common faint clay coats on ped faces and pore walls; few faint pressure faces; very few very fine and fine and common medium vesicular and tubular pores; very few very fine and fine roots; common iron oxides impregnated spots; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btng4.
2Btng4	137-161	Mixed light gray (10YR 7/2) 48% and very pale brown (10YR 7/3) 20%, many medium and coarse prominent brownish yellow (10YR 6/8) and common medium prominent red (2.5YR 4/8) mottles; fine sandy clay; moderate medium and coarse semi-angular blocky structure; moderately sticky and very plastic, firm

		moist, hard dry; common faint clay coats on pore walls and ped faces; few faint variegated sands; very few very fine and fine vesicular and few fine simple tubular pores; practically no roots; many iron oxides soft impregnated spots and common clay blocks; moderately alkaline (field pH 8.0); gradual and smooth boundary to 2Btng5.
2Btng5	161-183	Mixed light gray (10YR 7/2) 38% and very pale brown (10YR 7/3) 20%, many coarse prominent brownish yellow (10YR 6/8) and common medium and coarse prominent dark red (2.5YR 4/8) mottles; sandy clay; moderate medium and coarse semi-angular blocky structure; moderately sticky and very plastic, firm moist, hard dry; common faint clay coats on pore walls and ped faces; very few very fine variegated sands; few very fine and fine vesicular and very few fine simple tubular pores; practically no roots; many iron oxides soft impregnated spots and few clay blocks; moderately alkaline (field pH 8.0); gradual and smooth boundary to 2Btg.
2Btg	183-206+	Mixed very pale brown (10YR 7/3) 20 % and light gray (10YR 7/2) 18%, many coarse prominent yellowish brown (10YR 5/8) and common medium prominent red (2.5YR 4/8) mottles; sandy clay; moderate medium and coarse semi-angular blocky structure; moderately sticky and very plastic, firm moist, hard dry; common faint clay coats on ped faces and pore walls; few fine variegated sands; few fine and medium vesicular and few fine simple tubular pores; practically no roots; common iron oxides soft and semi-hardened impregnated spots and few clay blocks; moderately alkaline (field pH 8.0).

Pedon 15

I Information on the site

Profile symbol : Pedon 15
Soil name : Kula Ronghai series
Classification : Typic Natraqualf
Date of examination : December 16, 2004
Described by : Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Saowanuch Tawornpruek, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Supaluk Srithilertcharoen
Location : Approximately 290 m East of Suwanaphume-Tha Tum Road (No. 214) at 9.90 km from Suwanaphume Crossroads, Ban Don Phiman, Tambon Sra Ku, Amphoe Suwanaphume, Roi-Et province
Elevation : Approximately 117 m (MSL)
Map sheet number : 5740 II Coordination : 48 0372233 m E., 1717116 m N.

Landform

1. Physiographic position : Erosional plain
2. Surrounding landform : Flat
3. Slope on which profile site : 2%

Land use : Paddy rice (KDML 105)/Eucalyptus
Annual rainfall : Approximately 1300 mm
Mean temperature : Approximately 26 ^{o}C
Climate : Tropical savanna
Others : Agricultural

II General information on the soil

Parent material	: Wash over residuum derived from clastic sedimentary rock
Drainage	: Poorly drained
Permeability	: Slow
Runoff	: Slow
Depth of ground water	: More than 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apg	0-15	Mixed pink (7.5YR 7/3) 68% and brown (10YR 5/3) 30%, common fine prominent yellowish brown (10YR 5/8) roots mottles; slightly gravelly sandy loam; moderate weak fine and medium angular blocky structure; slightly sticky and slightly plastic, very friable moist, slightly hard dry; few variegated sands; common very fine and fine vesicular and very few fine simple tubular pores; many very fine and fine roots; few traces of dead roots and few iron-manganese oxides nodules; slightly acid (field pH 6.5); abrupt and smooth boundary to Bcg.
Bcg	15-50	Mixed light gray (10YR 7/2) 60% and pink (7.5YR 7/3) 30%, common fine and medium prominent black manganese oxides (2.5Y 2.5/1) and common fine prominent yellowish red (5YR 5/6) and yellowish brown (10YR 5/8) mottles; very gravelly sandy clay loam; strong coarse prismatic and columnar structure; moderately sticky and moderately plastic, firm moist, hard dry; few faint clay coats on pore walls; common very fine and fine vesicular and very few fine simple tubular pores; few very fine and fine roots; moderately alkaline (field pH 8.0); abrupt and smooth boundary to Btg1.
Btg1	50-70	Mixed light gray (10YR 7/1) 50% and (10YR 7/2) 42%, common fine prominent black manganese oxides (2.5Y 2.5/1), yellowish brown (10 YR 5/8) and dark yellowish brown (10YR 4/6) mottles; slightly gravelly sandy clay loam; strong prismatic and columnar structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on pore walls; very few very fine, few fine and medium vesicular and few fine tubular pores; very few very fine and fine roots; few soft and semi-hardened manganese-iron oxides nodules; strongly alkaline (field pH 8.5); clear and smooth boundary to Btg2.
Btg2	70-90	Mixed light gray (10YR 7/2) 48% and (10YR 7/1) 40%, common medium and coarse prominent brownish yellow (10YR 6/8) and common fine prominent black manganese oxides (2.5Y 2.5/1) mottles; fine sandy clay; strong prismatic and columnar structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on pore walls; few variegated sands; few very fine and fine vesicular and few fine tubular pores; very few very fine and fine roots; few soft and semi-hardened manganese-iron oxides nodules; strongly alkaline (field pH 8.5); clear and smooth boundary to Btg3.

Btg3	90-110	Mixed light gray (10YR 7/2) 55% and (10YR 7/1) 20%, common medium and coarse prominent brownish yellow (10YR 6/8) and common fine prominent red (10R 4/8) and black manganese oxides (2.5Y 2.5/1) mottles; fine sandy clay; weak coarse angular blocky (semi-massive) structure; moderately sticky and very plastic, very firm moist, very hard dry; common faint clay coats on pore walls; few variegated sands and red bands of iron oxides impregnated sands; few very fine, very fine and medium vesicular and fine tubular pores; very few very fine and fine roots; few soft iron oxides impregnated spots; strongly alkaline (field pH 8.5); clear and smooth boundary to 2Btg4.
2Btg4	110-130	Mixed pinkish gray (7.5YR 7/2) 43% and light gray (10YR 7/1) 20%, many medium and coarse prominent yellowish brown (10YR 5/8), common fine and medium prominent red (2.5YR 4/8) and few fine prominent black manganese oxides (2.5Y 2.5/1) and very dark gray dead roots (10YR 3/1) mottles; sandy clay; moderate medium and coarse semi-angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; common faint clay coats on pore walls and some clay bridge among sand grains; few very fine variegated sands and iron oxides red spots; very few very fine and few fine vesicular and few fine and medium tubular pores; practically no roots; evidences of some pinkish silt and fine sands; strongly alkaline (field pH 8.5); gradual and smooth boundary to 2Btng1.
2Btng1	130-153	Mixed very pale brown (10YR 7/3) 30% and light gray (10YR 7/2) 25%, many coarse distinct yellowish brown (10YR 5/6) and common fine and medium prominent red (2.5YR 4/8) mottles; sandy clay; moderate medium and coarse semi-angular blocky structure; moderately sticky and very plastic, firm moist, hard dry; common faint clay coats on pore walls and some clay bridge among sand grains; few variegated sands; very few very fine and fine vesicular and few fine simple tubular pores; practically no roots; few fine cracks; strongly alkaline (field pH 8.5); gradual and smooth boundary to 2Btg5.
2Btg5	153-182	Mixed very pale brown (10YR 7/3) 40% and light gray (10YR 7/2) 25%, many coarse distinct yellowish brown (10YR 5/6) and common fine and medium prominent red (2.5YR 4/8) mottles; sandy clay; moderate medium and coarse semi-angular blocky structure; moderately sticky and very plastic, firm moist, hard dry; few faint clay coats on pore walls and common faint clay coats among sand grains; common very fine variegated sands and few iron-oxides red spots; very few very fine and fine vesicular and few fine simple tubular pores; practically no roots; few fine cracks; strongly alkaline (field pH 8.5); gradual and smooth boundary to 2Btng2.
2Btng2	182-200+	Mixed very pale brown (10YR 7/3) 40% and light gray (10YR 7/2) 40%, common medium and coarse distinct brownish yellow (10YR 6/6) and common fine and medium prominent yellowish brown (10YR 5/8) and red (10R 4/8) mottles; sandy clay; moderate fine and medium semi-angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; few faint clay coats on pore walls and common faint clay bridge among sand grains; few very fine variegated sands and few iron-oxides red spots; very few very fine and few fine vesicular and simple tubular pores; practically no roots; few large iron-oxides impregnated spots; strongly alkaline (field pH 8.5).

Pedon 16

I Information on the site

Profile symbol	: Pedon 16
Soil name	: Kula Ronghai series
Classification	: Typic Natraqualf
Date of examination	: December 16, 2004
Described by	: Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Saowanuch Tawornpruek, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Supaluk Srithilertcharoen
Location	: Approximately 350 m East of Suwanaphume-Tha Tum Road (No. 214) at 9.90 km from Suwanaphume Crossroads, Ban Don Phiman, Tambon Sra Ku, Amphoe Suwanaphume, Roi-Et province
Elevation	: Approximately 116 m (MSL)
Map sheet number	: 5740 II Coordination : 48 0372287 m E., 1717085 m N.

Landform

1. Physiographic position	: Erosional plain
2. Surrounding landform	: Flat
3. Slope on which profile site	: 2%
Land use	: Paddy rice (KDML 105)/Eucalyptus
Annual rainfall	: Approximately 1300 mm
Mean temperature	: Approximately 26 ^{o}C
Climate	: Tropical savanna
Others	: Agricultural

II General information on the soil

Parent material	: Wash over residuum derived from clastic sedimentary rock
Drainage	: Poorly drained
Permeability	: Slow
Runoff	: Slow
Depth of ground water	: More than 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apg1	0-16/18	Mixed dark grayish brown (10YR 4/2) 93% and light brown (7.5YR 6/4) 5%, common fine prominent yellowish brown (10YR 5/8) mottles; sandy loam; moderate weak fine and medium subangular blocky structure; slightly sticky and slightly plastic, very friable moist, slightly hard dry; few fine variegated sands; common very fine and fine vesicular pores; many very fine and fine and few medium roots; common traces of dead roots; slightly acid (field pH 6.5); abrupt and smooth boundary to Apg2.
Apg2	18-21/28	Mixed light brown (7.5YR 6/4) 95% and grayish brown (10YR 5/2) 5%; loamy sand; moderate weak fine and medium semi-angular blocky structure; non sticky and non plastic, very friable moist, slightly hard dry; few fine variegated sands; common very fine and fine vesicular pores; few very fine and fine roots; few iron-manganese oxides nodules; neutral (field pH 7.0); abrupt and wavy boundary to Bcng.

Bcng	28-47/57	Mixed light gray (10YR 7/2) 68% and (10YR 7/1) 20%, common fine prominent yellowish red (5YR 4/6), yellowish brown roots mottle (10YR 5/8) and brownish yellow iron oxides (10YR 6/8) and common fine and medium prominent black manganese oxides (2.5Y 2.5/1) mottles; very gravelly sandy clay; strong prismatic and columnar structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on pore walls and nodule surfaces; few variegated sands; few very fine and fine vesicular and fine tubular pores; few very fine and fine roots; many iron- manganese oxides nodules; moderately alkaline (field pH 8.0); clear and wavy boundary to Btng1.
Btng1	57-72	Mixed light gray (10YR 7/2) 67% and light brown (7.5YR 6/3) 30%, common fine prominent black manganese oxides (2.5Y 2.5/1) and few fine prominent brownish yellow (10YR 6/8) mottles; sandy clay; strong prismatic and columnar structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on pore walls and clay bridged among sand grain; common large vertical cracks and few very fine variegated sands; few very fine and fine vesicular and fine tubular pores; very few very fine and fine roots; few manganese-iron oxides nodules; strongly alkaline (field pH 8.5); clear and wavy boundary to Btng2.
Btng2	72-94	Mixed light gray (10YR 7/2) 79% and light brown shifted sands (7.5YR 6/3) 10%, common fine and medium prominent olive yellow (2.5Y 6/8) and few fine prominent black manganese oxides (2.5Y 2.5/1) mottles; sandy clay; weak coarse angular blocky (semi-massive) structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on pore walls; few very fine variegated sands; common very fine and fine vesicular and few fine tubular pores; very few very fine and fine roots; common large bands of translocated sands (pink); strongly alkaline (field pH 8.5); clear and smooth boundary to Btng3.
Btng3	94-113	Mixed light gray (10YR 7/2) 71% and light brown shifted sands (7.5YR 6/3) 5%, common medium and coarse prominent yellowish brown (10YR 5/8) and few fine prominent black manganese oxides (2.5Y 2.5/1) mottles; sandy clay; moderate medium and coarse semi-angular blocky structure; moderately sticky and very plastic, very firm moist, very hard dry; common faint clay coats on pore walls and few faint clay bridged among sand grains; few very fine variegated sands; few very fine and fine vesicular and few fine tubular pores; very few very fine and fine roots; few large spots of iron oxides impregnated sand; strongly alkaline (field pH 8.5); clear and smooth boundary to 2Btng4.
2Btng4	113-138	Mixed light gray (10YR 7/2) 53%, (10YR 7/1) 20% and light brown shifted sands (7.5YR 6/3) 5%, common medium and coarse prominent yellowish brown (10YR 5/8), common fine prominent red (2.5YR 5/6), few fine prominent black manganese oxides (2.5Y 2.5/1) and few fine distinct very dark gray dead roots (10YR 3/1) mottles; sandy clay; moderate medium and coarse angular blocky structure; moderately sticky and moderately plastic, very firm moist, very hard dry; common faint clay coats on ped faces and clay bridged among sand grains; few very fine variegated sands and traces of dead roots; very few very fine, few

		fine and medium vesicular and few tubular pores; practically no roots; common large spots of iron oxides impregnated sand; strongly alkaline (field pH 8.5); gradual and smooth boundary to 2Btg.
2Btg	138-169	Mixed light gray (10YR 7/2) 34%, (10YR 7/1) 30% and light brown shifted sands (7.5YR 6/3) 5%, many medium and coarse prominent yellowish brown (10YR 5/8), common fine prominent red (2.5YR 5/6) and few fine distinct very dark gray dead roots (10YR 3/1) mottles; sandy clay; moderate fine and medium semi-angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; few faint clay coats on ped faces and clay bridged among sand grains; few variegated sands and some clay blocks; very few very fine, few fine and medium vesicular and few tubular pores; practically no roots; few large spots of iron oxides impregnated sand; strongly alkaline (field pH 8.5); gradual and smooth boundary to 2Btng5.
2Btng5	169-202+	Mixed light gray (10YR 7/2) 60% and light brown shifted sands (7.5YR 6/3) 5%, many medium and coarse prominent yellowish brown (10YR 5/8) and common fine and medium prominent red (10R 4/6) mottles; sandy clay; moderate fine and medium semi-angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; few faint clay coats on pore walls and clay bridged among sand grains; few very fine variegated sands; few very fine and fine vesicular and few tubular pores; practically no roots; few large spots of iron oxides impregnated sand; strongly alkaline (field pH 8.5).

Location 4 (Clayey textured salt affected soils)

Pedon 17

I Information on the site

Profile symbol	:	Pedon 17
Soil name	:	Udon series
Classification	:	Vertic Natraqualf
Date of examination	:	December 17, 2004
Described by	:	Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Saowanuch Tawornpruek, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Supaluk Srithilertcharoen
Location	:	Approximately 150 m North of Ban Phai – Chonnabot Road (No. 229) at 5.30 km from Ban Phai Crossroads, Ban Muang Pier, Tambon Muang Pier, Amphoe Ban Phai, Khon Kaen province
Elevation	:	Approximately 153 m (MSL)
Map sheet number	:	5541 III Coordination : 48 0251417 m E., 1778099 m N.

Landform

1. Physiographic position	:	Depression on erosional plain
2. Surrounding landform	:	Flat
3. Slope on which profile site	:	2%
Land use	:	Left idle under salt tolerant grasses
Annual rainfall	:	Approximately 1200 mm
Mean temperature	:	Approximately 26 ^{o}C
Climate	:	Tropical savanna
Others	:	Settlement

II General information on the soil

Parent material	:	Alluvium
Drainage	:	Poorly drained
Permeability	:	Slow
Runoff	:	Slow
Depth of ground water	:	Approximately 170 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Ang	0-20	Mixed brown (10YR 4/3) 59 % and dark brown (10YR 3/3) 40 %, few fine prominent yellowish brown (10YR 5/8) roots mottles; clay; weak coarse angular blocky, semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; common traces of dead roots; very few very fine, few fine vesicular and fine simple tubular pores; common very fine and fine roots; common cracks (varies sizes); slightly acid (field pH 6.5); clear and smooth boundary to ABng.
ABng	20-36	Mixed brown (10YR 4/3) 88% and grayish brown (10YR 5/2) 10%, common fine distinct dark yellowish brown (10YR 4/6) roots mottles; clay; weak coarse angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; common traces of dead roots; common very fine and few

		fine vesicular and fine simple tubular pores; common very fine and fine roots; common lateral cracks (varies sizes); very strongly acid (field pH 5.0); clear and smooth boundary to Btng1.
Btng1	36-60	Mixed brown (10YR 4/3) 85% and pale brown (10YR 6/3) 5%, common fine and medium prominent strong brown (7.5YR 5/6) mottles; clay; moderate medium and coarse semi-angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; few faint clay coats on pore walls; common very fine and fine vesicular and few simple tubular pores; common very fine and fine root; common traces of dead roots; very strongly acid (field pH 5.0); clear and smooth boundary to Btng2.
Btng2	60-85	Dark grayish brown (10YR 4/2), common fine and medium prominent yellowish brown (10YR 5/8) and yellowish red (5YR 4/6) mottles; clay; moderate fine and medium semi-angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; common faint clay coats on ped faces and pore walls; vertical krotovenus (very dark gray); common very fine and few vesicular and few simple tubular pores; common very fine and fine root; few traces of dead roots; very strongly acid (field pH 5.0); clear and smooth boundary to Btng3.
Btng3	85-110	Dark grayish brown (10YR 4/2), common fine and medium prominent strong brown (7.5YR 5/8) and yellowish red (5YR 4/6) mottles; clay ; moderate fine and medium angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; common faint clay coats on ped faces and pore walls; few fine cracks; few very fine, common fine vesicular and few fine simple tubular pores; common very fine and fine root; few very fine variegated sands; very strongly acid (field pH 5.0); clear and smooth boundary to Btng4.
Btng4	110-130	Dark grayish brown (10YR 4/2), common fine and medium prominent dark red (2.5YR 3/6) mottles; silty clay; moderate fine and medium angular blocky structure; very sticky and moderately plastic, firm moist, very hard dry; common faint clay coats on ped faces and pore walls; few fine brisht red spots; few very fine and fine vesicular and common fine tubular pores; common very fine and fine roots; very strongly acid (field pH 4.5); abrupt and smooth boundary to Bssg1.
Bssg1	130-165	Gray (5YR 6/1), common medium and coarse prominent light red (10R 6/8) mottles; silty clay; weak coarse angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; few faint clay coat on some ped faces and pore walls; common distinct large pressure faces and slickenside; few very fine, very few fine vesicular and simple tubular pores; few very fine and fine roots; very strongly acid (field pH 4.5); gradual and smooth boundary to Bssg2.
Bssg2	165-200+	Gray (5YR 6/1), common medium and coarse prominent light red (10R 6/8) mottles; silty clay; weak coarse angular blocky, semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; few faint clay coat on some ped faces and pore walls; common distinct large pressure faces and slickenside; few very fine and fine vesicular and very few fine simple tubular pores; few very fine and fine roots; very strongly acid (field pH 4.5).

Pedon 18

I Information on the site

Profile symbol	:	Pedon 18
Soil name	:	Udon series
Classification	:	Vertic Natraqualf
Date of examination	:	December 18, 2004
Described by	:	Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Saowanuch Tawornpruek, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Supaluk Srithilertcharoen
Location	:	Approximately 160 m North of Ban Phai – Chonnabot Road (No. 229) at 5.30 km from Ban Phai Crossroads, Ban Muang Pier, Tambon Muang Pier, Amphoe Ban Phai, Khon Kaen province
Elevation	:	Approximately 152 m (MSL)
Map sheet number	:	5541 III Coordination : 48 0251474 m E., 1778111 m N.

Landform

1. Physiographic position	:	Depression on erosional plain
2. Surrounding landform	:	Flat
3. Slope on which profile site	:	2%
Land use	:	Left idle under tall grasses and local grasses
Annual rainfall	:	Approximately 1200 mm
Mean temperature	:	Approximately 26 ^{o}C
Climate	:	Tropical savanna
Others	:	Settlement mainly

II General information on the soil

Parent material	:	Alluvium over residuum derived from clastic sedimentary rock
Drainage	:	Poorly drained
Permeability	:	Slow
Runoff	:	Slow
Depth of ground water	:	Approximately 180 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Ang	0-19	Dark grayish brown (10YR 4/2), common fine prominent yellowish red (5YR 4/6) roots mottles; clay; weak very coarse semi-angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; very few variegated sands; few very fine and fine vesicular and few fine tubular pores; many very fine and fine and few medium roots; common traces of dead roots; moderately acid (field pH 6.0); clear and smooth boundary to Btng1.
Btng1	19-43	Mixed brown (10YR 4/3) 70% and grayish brown (10YR 5/2) 20%, common fine prominent yellowish brown (10YR 5/8) roots mottles; clay; weak very coarse semi-angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; few faint clay coats on ped faces and pore walls; common fine cracks; common very fine and few fine vesicular and few fine tubular pores; common very fine and fine and very few medium roots; traces of dead roots; slightly acid (field pH 6.5); clear and smooth boundary to Btng2.

Btng2	43-64	Mixed dark grayish brown (10YR 4/2) 55% and light yellowish brown (2.5Y 6/3) 20%, common medium and coarse prominent yellowish brown (10YR 5/8) and fine prominent strong brown (7.5 YR 5/8) mottles; clay; weak very coarse angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; few faint clay coats on ped faces and pore walls; few traces of dead roots; few very fine and fine vesicular and few fine tubular pores; few very fine and fine roots; few fine cracks; moderately acid (field pH 6.0); clear and smooth boundary to Btng3.
Btng3	64-94	Pale brown (10YR 6/3), common medium and coarse prominent yellowish brown (10YR 5/8) and common fine and medium yellowish red (5YR 4/6) mottles; clay; weak very coarse angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on ped faces and pore walls; common pressure faces and few slickenside; few very fine and common fine vesicular and few fine tubular pores; very few very fine and fine roots; few traces of dead roots; slightly acid (field pH 6.5); clear and smooth boundary to Btng4.
Btng4	94-113	Pale brown (10YR 6/3), common medium prominent red (2.5YR 4/6) and common fine prominent yellowish brown (10YR 5/8) mottles; clay; weak very coarse angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on ped faces and pore walls; common pressure faces, few slickenside and few fine cracks; few very fine and fine vesicular and few fine tubular pores; very few very fine and fine roots; few traces of dead roots; slightly acid (field pH 6.5); clear and smooth boundary to Btng5.
Btng5	113-140	Pale brown (10YR 6/3), common fine and medium prominent red (2.5YR 4/8) and common fine distinct grayish brown (10YR 5/2) mottles; silty clay; weak coarse angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coat on ped faces and pore walls; very few very fine and common fine vesicular and few fine simple tubular pores; practically no roots; few clay blocks; slightly acid (field pH 6.5); clear and smooth boundary to 2Btg.
2Btg	140-169	Light brown (7.5YR 6/4), common medium prominent red (2.5 YR 4/8) and common fine distinct yellowish brown (10YR 5/8) mottles; very fine sandy clay loam; moderate fine and medium semi-angular blocky structure; moderately sticky and very plastic, slightly firm moist, slightly hard dry; few faint clay coat on pore walls and clay bridged among very fine sand grains; common very fine variegated sand grains; few very fine and fine vesicular and few tubular pores; practically no roots; slightly acid (field pH 6.5); clear and smooth boundary to 2Btng6.
2Btng6	169-195+	Pale brown (10YR 6/3), common medium prominent yellowish red (5YR 4/6) and common fine and medium prominent yellowish brown (10YR 5/8) mottles; fine sandy clay; moderate fine and medium semi-angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; few faint clay coat on pore walls and clay bridged among very fine sand grains; common very fine variegated sand grains; few very fine and fine vesicular and few tubular pores; practically no roots; neutral (field pH 7.0).

Pedon 19

I Information on the site

Profile symbol	:	Pedon 19
Soil name	:	Udon series
Classification	:	Vertic Natraqualf
Date of examination	:	December 18, 2004
Described by	:	Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Saowanuch Tawornpruek, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Supaluk Srithilertcharoen
Location	:	Approximately 171 m North of Ban Phai – Chonnabot Road (No. 229) at 5.30 km from Ban Phai Crossroads, Ban Muang Pier, Tambon Muang Pier, Amphoe Ban Phai, Khon Kaen province
Elevation	:	Approximately 152 m (MSL)
Map sheet number	:	5541 III Coordination : 48 0251534 m E., 1778128 m N.

Landform

1. Physiographic position	:	Depression on erosional plain
2. Surrounding landform	:	Flat
3. Slope on which profile site	:	2%
Land use	:	Left idle at time of sampling (under local grasses)
Annual rainfall	:	Approximately 1200 mm
Mean temperature	:	Approximately 26 ^{o}C
Climate	:	Tropical savanna
Others	:	Settlement with near by paddy field

II General information on the soil

Parent material	:	Alluvium over residuum derived from clastic sedimentary rock
Drainage	:	Poorly drained
Permeability	:	Slow
Runoff	:	Slow
Depth of ground water	:	Approximately 170 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Ang	0-19	Mixed dark brown (10YR 3/3) 60 % and brown (10YR 4/3) 30 %, common fine distinct dark yellowish brown (10YR 4/6) and common fine prominent yellowish brown roots mottle (10YR 5/8) mottles; clay; weak very coarse angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; very few fine variegated sands; very few very fine and fine vesicular and few fine simple tubular pores; many very fine and fine, few medium roots; traces of dead roots; neutral (field pH 7.0); clear and smooth boundary to Btng1.
Btng1	19-38	Brown (10YR 4/3), common medium and coarse prominent strong brown (7.5YR 4/6) mottles; clay; weak very coarse angular blocky, semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; few faint clay coats on pore walls; very few fine variegated sands; few very fine, fine and medium vesicular and few fine tubular pores; common very fine and fine roots; few fine cracks; slightly acid (field pH 6.5); clear and smooth boundary to Btng2.

Btng2	38-56	Brown (10YR 4/3), many medium and coarse prominent strong brown (7.5YR 4/6) and common fine prominent red (2.5YR 4/8) mottles; clay; weak very coarse semi-angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on ped faces and pore walls; common cracks and very few fine variegated sands; few very fine, common fine vesicular and few fine tubular pores; few very fine and fine roots; traces of dead roots; slightly acid (field pH 6.5); clear and smooth boundary to Btng3.
Btng3	56-77	Mixed brown (10YR 4/3) 60% and light brownish gray (10YR 6/2) 10%, many medium distinct dark yellowish brown (10YR 4/6) and common fine prominent red (2.5YR 4/8) mottles; clay; weak very coarse semi-angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on ped faces and pore walls; few very fine variegated sands and few pressure faces; common very fine, few fine vesicular and few simple tubular pores; few very fine and fine roots; traces of dead roots and few very small soil warms; slightly acid (field pH 6.5); clear and smooth boundary to 2Btng4.
2Btng4	77-100	Mixed pale brown (10YR 6/3) 75% and light brown shifted sands (7.5YR 6/4) 5%, common medium prominent yellowish brown (10YR 5/8) and common fine prominent red (2.5YR 4/8) mottles; fine sandy clay; weak very coarse semi-angular blocky and semi-massive structure; moderately sticky and moderately plastic, firm moist, hard dry; few faint clay coats on pore walls and common faint clay bridged among sand grains; few variegated sands; very few very fine and fine vesicular and few fine simple tubular pores; few very fine and fine roots; few iron-manganese oxide nodules; slightly acid (field pH 6.5); abrupt and smooth boundary to 2Btng5.
2Btng5	100-119	Reddish yellow (7.5YR 6/6), common fine and medium prominent brownish yellow (10YR 6/8) and common fine prominent red (2.5YR 4/8) mottles; sandy loam; weak coarse semi-angular blocky structure; slightly sticky and slightly plastic, friable moist, soft dry; common faint clay bridged among sand grains; common variegated sands; few very fine and common fine vesicular pores; few very fine and fine roots; neutral (field pH 7.0); gradual and smooth boundary to 2Btng6.
2Btng6	119-146	Reddish yellow (5YR 6/6), common medium prominent yellowish brown (10YR 5/8) and red (2.5YR 4/8) and common fine prominent black manganese oxides (2.5Y 2.5/1) mottles; loamy sand; weak fine and medium semi-angular blocky structure; non sticky and non plastic, very friable moist, loose dry; few faint clay bridged among sand grains; common variegated sands; few very fine and fine vesicular and few tubular pores; very few very fine and fine roots; moderately alkaline (field pH 7.0); clear and smooth boundary to 2Btng7.
2Btng7 (2BCrng1)	146-175	Mixed light reddish brown (5YR 6/4) 60% and pale brown (10YR 6/3) 30%, common fine distinct dark yellowish brown (10YR 4/6) and very dark gray dead root (10YR 3/1) and common fine prominent black manganese oxides (2.5Y

		2.5/1) mottles; sandy loam; moderate medium and coarse semi-angular blocky structure; slightly sticky and slightly plastic, slightly firm moist, soft dry; very few faint clay coats on pore walls and common faint clay bridged among sand grains; common variegated sands; few very fine and fine vesicular and few tubular pores; very few very fine and fine roots; common patches of variegated sands; moderately alkaline (field pH 7.0); clear and smooth boundary to 2Btng8.
2Btng8 (2BCrng2)	175-210+	Mixed light reddish brown (5YR 6/4) 85% and pale brown (10YR 6/3) 10%, common medium prominent light olive brown (2.5Y 5/6) and common fine prominent dark yellowish brown (10YR 4/4) mottles; sandy clay loam; weak medium and coarse semi-angular blocky structure; slightly sticky and slightly plastic, slightly friable moist, slightly hard dry; very few faint clay coats on pore walls and few faint clay bridged among sand grains; common variegated sands; few very fine and fine vesicular and few tubular pores; practically no roots; few iron-manganese oxide nodules; moderately alkaline (field pH 7.0).

Pedon 20

I Information on the site

Profile symbol	:	Pedon 20
Soil name	:	Udon series
Classification	:	Vertic Natraqualf
Date of examination	:	December 18, 2004
Described by	:	Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Saowanuch Tawornpruek, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Supaluk Srithilertcharoen
Location	:	Approximately 181 m North of Ban Phai – Chonnabot Road (No. 229) at 5.30 km from Ban Phai Crossroads, Ban Muang Pier, Tambon Muang Pier, Amphoe Ban Phai, Khon Kaen province
Elevation	:	Approximately 152 m (MSL)
Map sheet number	:	5541 III Coordination : 48 0251663 m E., 1778154 m N.

Landform

1. Physiographic position	:	Depression on erosional plain
2. Surrounding landform	:	Flat
3. Slope on which profile site	:	2%
Land use	:	Left idle under tall grasses and salt tolerant grasses
Annual rainfall	:	Approximately 1200 mm
Mean temperature	:	Approximately 26 ^{o}C
Climate	:	Tropical savanna
Others	:	Settlement mainly

II General information on the soil

Parent material	:	Alluvium
Drainage	:	Poorly drained
Permeability	:	Slow
Runoff	:	Slow
Depth of ground water	:	Approximately 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Ang	0-20	Dark grayish brown (10YR 4/2), common fine and medium prominent strong brown (7.5YR 4/6) and yellowish brown (10YR 5/8) mottles; clay; weak coarse angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; very few fine variegated sands; very few very fine, few fine and common medium vesicular and few tubular pores; many very fine, fine and few medium and coarse roots; common traces of dead roots; neutral (field pH 7.0); clear and smooth boundary to Btng1.
Btng1	20-44	Grayish brown (10YR 5/2), common fine and medium distinct dark yellowish brown (10YR 4/6) and common fine prominent yellowish red (5YR 4/6) mottles; clay; moderate fine and medium semi-angular blocky structure; moderately sticky and moderately plastic, very firm moist, very hard dry; few faint clay coats on ped faces and pore walls; very few fine variegated sands; common very fine and fine vesicular and few simple tubular pores; few very fine and fine roots; few traces of dead roots; slightly acid (field pH 6.5); clear and smooth boundary to Btng2.
Btng2	44-66	Light brownish gray (10YR 6/2), common fine and medium prominent strong brown (7.5YR 5/6) and common fine prominent strong brown (7.5YR 4/6) mottles; clay; moderate medium and coarse semi-angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; few faint clay coats on ped faces and pore walls; common fine cracks and few pressure faces; common very fine and fine and few medium vesicular and few fine tubular pores; few very fine and fine roots; slightly acid (field pH 6.5); clear and smooth boundary to Btng3.
Btng3	66-89	Light brownish gray (10YR 6/2), common fine and medium distinct dark yellowish brown (10YR 4/6) and common fine prominent red (2.5YR 4/6) and yellowish brown (10YR 5/8) mottles; clay; moderate medium and coarse semi-angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; few faint clay coats on ped faces and pore walls; common fine cracks and common faint pressure faces; common very fine and fine and few medium vesicular and few fine tubular pores; few very fine and fine roots; slightly acid (field pH 6.5); clear and smooth boundary to Btng4.
Btng4	89-113	Grayish brown (10YR 5/2), common fine and medium prominent red (2.5YR 4/8) and common fine prominent yellowish brown (10YR 5/8) mottles; fine sandy clay; weak medium and coarse angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; few faint clay coats on ped faces and pore walls and common clay coat among sand grains; common cracks; very few very fine, few fine vesicular and tubular pores; few very fine and fine roots; few patches of fine variegated sands; neutral (field pH 7.0); clear and smooth boundary to Btng5.
Btng5	113-139	Mixed light brownish gray (10YR 6/2) 80% and light brown shifted sands (7.5YR 6/4) 10%, common fine and medium prominent yellowish red (5YR 5/8) and common fine prominent light olive brown (2.5Y 5/6) mottles; fine sandy clay;

		weak medium and coarse angular blocky and semi-massive structure; moderately sticky and moderately plastic, very firm moist, very hard dry; few faint clay coats on pore walls and common faint clay bridged among sand grains; common variegated sands; very few very fine and few fine vesicular and fine simple tubular pores; few very fine and fine roots; few fine cracks; neutral (field pH 7.0); clear and smooth boundary to Btng6.
Btng6	139-171	Mixed light brownish gray (10YR 6/2) 85% and light brown shifted sands (7.5YR 6/4) 10%, common fine prominent yellowish brown (10YR 5/8) and common fine distinct very dark gray dead root (10YR 3/1) mottles; fine sandy clay; weak medium and coarse angular blocky and semi-massive structure; moderately sticky and moderately plastic, very firm moist, very hard dry; few faint clay coats on ped faces and pore walls and common faint clay bridged among sand grains; common variegated sands; very few very fine and few fine vesicular and fine simple tubular pores; very few very fine and fine roots; neutral (field pH 7.0); clear and smooth boundary to Btng7.
Btng7	171-200+	Mixed light brownish gray (10YR 6/2) 90% and light brown shifted sands (7.5YR 6/4) 5%, common fine prominent yellowish brown (10YR 5/8) and red (10R 4/8) and common fine distinct very dark gray dead root (10YR 3/1) mottles; very fine sandy clay; weak very coarse angular blocky and semi-massive structure; moderately sticky and moderately plastic, very firm moist, very hard dry; few faint clay coats on ped faces and pore walls and common faint clay bridged among sand grains; common variegated sands and few fine cracks; few very fine and fine vesicular and very fine simple tubular pores; very few very fine and fine roots; few large slickenside and common dark spots of manganese oxides; neutral (field pH 7.0).

Pedon 21

I Information on the site

Profile symbol	:	Pedon 21
Soil name	:	Udon series
Classification	:	Vertic Natraqualf
Date of examination	:	December 18, 2004
Described by	:	Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Saowanuch Tawornpruek, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Supaluk Srithilertcharoen
Location	:	Approximately 192 m North of Ban Phai – Chonnabot Road (No. 229) at 5.30 km from Ban Phai Crossroads, Ban Muang Pier, Tambon Muang Pier, Amphoe Ban Phai, Khon Kaen province
Elevation	:	Approximately 153 m (MSL)
Map sheet number	:	5541 III Coordination : 48 0251715 m E., 1778167 m N.

Landform

1. Physiographic position	:	Depression on erosional plain
2. Surrounding landform	:	Flat
3. Slope on which profile site	:	2%
Land use	:	Left idle under salt tolerant grasses
Annual rainfall	:	Approximately 1200 mm
Mean temperature	:	Approximately 26 ^{o}C
Climate	:	Tropical savanna
Others	:	Settlement mainly with some paddy field near by

II <u>General information on the soil</u>

Parent material	:	Alluvium
Drainage	:	Poorly drained
Permeability	:	Slow
Runoff	:	Slow
Depth of ground water	:	More than 200 cm at time of sampling

III <u>Profile description</u>

Horizon	Depth (cm)	Description
Ang	0-18	Brown (10YR 4/3), common medium prominent strong brown (7.5YR 4/6) mottles; clay; weak very coarse angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; many vertical cracks of varies sizes; common very fine, few fine vesicular and very few very fine simple tubular pores; many very fine and fine roots; common traces of dead roots; moderately acid (field pH 6.0); clear and smooth boundary to Btng1.
Btng1	18-45	Brown (10YR 4/3), common medium prominent strong brown (7.5YR 4/6) and common fine distinct gray (10YR 5/1) mottles; clay; moderate medium and coarse angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; few faint clay coats on ped faces and pore walls; few fine variegated sands; common very fine and fine vesicular and few fine tubular pores; common very fine and fine roots; common traces of dead roots; moderately acid (field pH 6.0); clear and smooth boundary to Btng2.
Btng2	45-68	Brown (10YR 4/3), many medium prominent strong brown (7.5YR 4/6) and common fine prominent yellowish red root mottle (5YR 4/6) mottles; clay; strong medium and coarse angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on ped faces and pore walls; few fine cracks and very few very fine variegated sands; very few very fine and common fine vesicular and few fine tubular pores; common very fine and fine roots; common traces of dead roots; strongly acid (field pH 5.5); clear and smooth boundary to Btng3.
Btng3	68-89	Dark grayish brown (10YR 4/2), many medium prominent yellowish red (5YR 4/6) mottles; clay; strong medium and coarse angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; common distinct clay coats on ped faces and pore walls; few pressure faces and fine cracks; common very fine and fine vesicular and few tubular pores; common very fine and fine roots; few large krotuvena; very strongly acid (field pH 4.5); clear and smooth boundary to Btng4.

Btng4	89-112	Dark grayish brown (10YR 4/2), many fine and medium prominent red (2.5YR 4/8) and common fine and medium prominent red (10R 4/8) mottles; silty clay; moderate fine and medium semi-angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; common distinct clay coats on ped faces and pore walls; few pressure faces and few fine cracks; very few very fine and few fine vesicular and few tubular pores; common very fine and fine roots; few iron-manganese nodules; very strongly acid (field pH 4.5); clear and smooth boundary to Btng5.
Btng5	112-137	Grayish brown (10YR 5/2), many medium prominent dark red (2.5YR 3/6), common medium prominent red (10R 4/8) and common fine prominent yellowish brown (10YR 5/8) mottles; silty clay; moderate fine and medium semi-angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; common distinct clay coats on ped faces and pore walls; few pressure faces and few fine cracks; few very fine and fine vesicular and fine tubular pores; common very fine and fine and few medium roots; common large slickenside; very strongly acid (field pH 4.5); clear and smooth boundary to Btng6.
Btng6	137-161	Grayish brown (10YR 5/2), many medium prominent dark red (2.5YR 4/6) and common fine prominent yellowish brown (10YR 5/8) mottles; silty clay; moderate medium and coarse semi-angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; common distinct clay coats on ped faces and pore walls; few variegated sands and few fine cracks; very few very fine and few fine vesicular and fine tubular pores; few very fine and fine roots; common large slickenside; very strongly acid (field pH 4.5); clear and smooth boundary to Btng7.
Btng7	161-200+	Grayish brown (10YR 5/2), many fine and medium prominent dark red (2.5YR 4/6) and yellowish brown (10YR 5/8) mottles; silty clay; moderate medium and coarse semi-angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; common distinct clay coats on ped faces and pore walls; few fine cracks; very few very fine and few fine vesicular and fine tubular pores; few very fine and fine roots; common large slickenside; strongly acid (field pH 5.5).

Pedon 22

I Information on the site

Profile symbol	:	Pedon 22
Soil name	:	Udon series
Classification	:	Vertic Natraqualf
Date of examination	:	December 17, 2004
Described by	:	Irb Kheoruenromne, Napaporn Wongpokhom, Somchai Anusontpornperm, Saowanuch Tawornpruek, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Supaluk Srithilertcharoen
Location	:	Approximately 202 m North of Ban Phai – Chonnabot Road (No. 229) at 5.30 km from Ban Phai Crossroads, Ban Muang Pier, Tambon Muang Pier, Amphoe Ban Phai, Khon Kaen province
Elevation	:	Approximately 152 m (MSL)
Map sheet number	:	5541 III Coordination : 48 0251599 m E., 1778144 m N.

Landform

1. Physiographic position	:	Depression on erosional plain
2. Surrounding landform	:	Flat
3. Slope on which profile site	:	2%
Land use	:	Left idle under salt tolerant grasses
Annual rainfall	:	Approximately 1200 mm
Mean temperature	:	Approximately 26 ^{o}C
Climate	:	Tropical savanna
Others	:	Settlement mainly

II General information on the soil

Parent material	:	Alluvium
Drainage	:	Poorly drained
Permeability	:	Slow
Runoff	:	Slow
Depth of ground water	:	Approximately 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Ang	0-21	Dark grayish brown (10YR 4/2), common medium and coarse prominent strong brown (7.5YR 5/6) mottles; clay; weak very coarse angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; few traces of dead roots and common large vertical cracks; few very fine, fine and very fine and medium vesicular and few fine simple tubular pores; many very fine and fine roots; few fine cracks; slightly acid (field pH 6.5); clear and smooth boundary to Btng1.
Btng1	21-41	Dark grayish brown (10YR 4/2), common fine and medium prominent yellowish brown (10YR 5/8) mottles; clay; moderate medium and coarse angular blocky structure; moderately sticky and moderately plastic, very firm moist, very hard dry; few faint clay coats on pore walls and few faint clay bridged among sand grains; very few translocated very fine sands patched in tubular pores; common

		very fine and fine vesicular and few tubular pores; common very fine and fine roots; few fine cracks; slightly acid (field pH 6.5); clear and smooth boundary to Btng2.
Btng2	41-66	Mixed light gray (10YR 7/2) 40% and dark grayish brown (10YR 4/2) 20%, many fine and medium distinct yellowish brown (10YR 5/6) and common fine and medium prominent yellowish brown (10YR 5/8) mottles; clay; moderate medium and coarse angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on ped faces and pore walls; very few very fine variegated sands; few very fine and common fine vesicular and few fine tubular pores; few very fine and fine roots; trace of dead roots; slightly acid (field pH 6.5); clear and smooth boundary to Btng3.
Btng3	66-88	Mixed light gray (10YR 7/2) 35% and gray (10YR 5/1) 30%, common fine and medium prominent yellowish brown (10YR 5/8) and strong brown (7.5YR 5/8) and common fine and medium distinct dark yellowish brown (10YR 4/4) mottles; clay; moderate medium and coarse angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; common distinct clay coats on ped faces and pore walls; very few very fine variegated sands; few very fine and common fine vesicular and few fine tubular pores; few very fine and fine roots; trace of dead roots; slightly acid (field pH 6.5); clear and smooth boundary to Btng4.
Btng4	88-108	Mixed gray (2.5Y 6/1) 50% and grayish brown (10YR 5/2) 10%, many fine and medium prominent yellowish brown (10YR 5/8) and common fine prominent light olive brown (2.5Y 5/6) mottles; clay; moderate fine and medium angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; common distinct clay coats on ped faces and pore walls; few fine pressure faces, few fine variegated sands and fine cracks; few very fine and common fine vesicular and few fine tubular pores; few very fine and fine roots; common large slickenside and common trace of dead roots; neutral (field pH 7.0); clear and smooth boundary to Btng5.
Btng5	108-132	Gray (2.5Y 6/1), common fine and medium prominent yellowish brown (10YR 5/8) and dark yellowish brown (10YR 4/6) mottles; silty clay; moderate medium and coarse angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; few faint clay coats on ped faces and pore walls; few fine pressure faces; very few very fine and fine vesicular and few fine tubular pores; few very fine and fine roots; common large slickenside and few fine spots of manganese oxides accumulates; neutral (field pH 7.0); clear and smooth boundary to Btng6.
Btng6	132-165	Gray (10YR 5/1), common fine and medium prominent red (10R 4/8) and yellowish brown (10YR 5/8) mottles; silty clay; moderate fine and medium semi-angular blocky structure; very sticky and very plastic, very firm moist, very hard dry; few faint clay coats on ped faces and pore walls; few fine spots of manganese oxide nodule; very few very fine and few fine vesicular and tubular pores; few very fine and fine roots and root cluster; common large slickenside; moderately alkaline (field pH 7.0); clear and smooth boundary to Btng7.
Btng7	165-184	Mixed gray (10YR 5/1) 60% and very dark grayish brown (10YR 3/2) 20%, common fine and medium prominent yellowish brown (10YR 5/8) and red (2.5YR 4/8) mottles; silty clay; moderate medium and coarse semi-angular blocky

		structure; very sticky and very plastic, very firm moist, very hard dry; few faint clay coats on ped faces and pore walls; few fine variegated sand and few pressure faces; very few very fine and few fine vesicular and tubular pores; few very fine and fine roots; few large slickenside; moderately alkaline (field pH 7.0); clear and smooth boundary to Btng8.
Btng8	184-202+	Mixed gray (10YR 5/1) 40% and very dark gray (10YR 3/1) 30%, many medium prominent red (2.5YR 4/8) and common fine and medium prominent yellowish brown (10YR 5/8) mottles; silty clay; weak very coarse semi-angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; few faint clay coats on ped faces and pore walls; very few fine variegated sand and few pressure faces; few very fine and fine vesicular and few tubular pores; few very fine and fine roots; common large slickenside; moderately alkaline (field pH 7.0).

Location 5 (Sandy textured salt affected soils)

Pedon 23

I Information on the site

Profile symbol	:	Pedon 23
Soil name	:	Roi Et, saline variant
Classification	:	Typic Natraqualf
Date of examination	:	24 December 2004
Described by	:	Irb Kheoruenromne, Napaporn Wongpokhom, Punyisa Trakoonyingcharoen, Suphicha Thanachit, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Ladawan Nakforn
Location	:	Approximately 100 m West of Sida-bua Yai Road (No. 202) at 7.0 km from Sida Crossroads, Ban Nong Klang Yai, Tambon Kut Chok, Amphoe Bua Yai, Nakhon Ratchasima province
Elevation	:	Approximately 160 m (MSL)
Map sheet number	:	5440 II Coordination : 48 0229582 m E., 1721187 m N.

Landform

1. Physiographic position	:	Erosional plain
2. Surrounding landform	:	Gently undulating
3. Slope on which profile site	:	2%
Land use	:	Paddy field, left idle at time of sampling under local weeds, salt tolerant species
Annual rainfall	:	Approximately 1100 mm
Mean temperature	:	Approximately 26 ^{o}C
Climate	:	Tropical savanna
Others	:	Garbage disposal pond

II General information on the soil

Parent material	:	Wash over residuum derived from weathered clastic sedimentary rocks
Drainage	:	Poorly drained
Permeability	:	Moderate
Runoff	:	Slow
Depth of ground water	:	Approximately 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apng	0-11	Mixed pink (7.5YR 7/3) 70% and yellowish red (5YR 5/8) 13%, common medium prominent strong brown (7.5YR 5/8), common medium distinct brown (7.5YR 4/2) and common fine distinct dark brown (7.5YR 3/2) mottles; loamy sand; moderate weak fine and medium subangular blocky structure; slightly sticky and non plastic, friable moist, soft dry; common variegated sands; common very fine and fine vesicular pores; common very fine and fine roots; common traces of dead roots; neutral (field pH 7.0); clear and smooth boundary to Bng1.
Bng1	11-30	Mixed pinkish gray (7.5YR 7/2) 70% and reddish yellow (5YR 6/6) 12%, common fine prominent strong brown (7.5YR 5/8) and black (7.5YR 2.5/1) and common fine distinct strong brown (7.5YR 5/6) mottles; loamy sand; weak fine

		and medium subangular blocky structure; non-sticky and non-plastic, friable moist, loose dry; common variegated sands; common very fine and fine vesicular pores; few very fine and fine roots; common traces of dead roots; strongly alkaline (field pH 8.5); clear and smooth boundary to Bng2.
Bng2	30-47	Mixed pinkish gray (7.5YR 7/2) 80% and reddish yellow (5YR 6/8) 15%, common fine prominent yellow (10YR 7/8) mottles; loamy sand; moderate weak fine and medium semi-angular blocky structure; non-sticky and non-plastic, friable moist, soft dry; common variegated sands; common very fine and fine vesicular pores; very few very fine and medium roots; few traces of dead roots; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng1.
Btng1	47-69/76	Mixed pinkish gray (7.5YR 7/2) 70% and yellowish red (5YR 5/8) 20%, common fine prominent brownish yellow (10YR 6/8) mottles; sandy loam; moderate weak fine and medium semi-angular blocky structure; slightly sticky and non-plastic, friable moist, slightly hard dry; few faint clay bridges among sand grains; common variegated sands; few very fine and fine and medium vesicular pores; very few very fine and fine roots; few traces of dead roots; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng2.
Btng2	76-95	Mixed pink (7.5YR 7/3) 60%, light gray (10YR 7/2) 20% and yellowish red sand grain (5YR 5/8) 10%, common fine prominent yellowish red (5YR 5/8), yellow (10YR 7/8) and very dark grayish brown (10YR 3/2) mottles; sandy loam; moderate fine and medium semi-angular blocky structure; slightly sticky and slightly plastic, slightly firm moist, slightly hard dry; common faint clay bridges among sand grains; common variegated sands, few iron-manganese oxide nodules; very few very fine, few fine and medium vesicular pores; practically no roots; few traces of dead roots; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng3.
Btng3	95-110	Mixed pink (7.5YR 7/3) 60%, light gray (10YR 7/2) 20% and yellowish red sand grain (5YR 5/8) 10%, common medium prominent brownish yellow (10YR 6/8), common fine prominent yellowish red (5YR 5/8) and dark yellowish brown (10YR 3/4) mottles; sandy loam; moderate medium and coarse semi-angular blocky structure; slightly sticky and slightly plastic, slightly firm moist, slightly hard dry; very few faint clay coats on ped faces and common faint clay bridges among sand grains; common variegated sands, few iron-manganese oxide nodules; very few very fine, few fine and medium vesicular pores; practically no roots; few traces of dead roots; strongly alkaline (field pH 8.5); clear and smooth boundary to Btng4.
Btng4	110-131	Mixed pink (7.5YR 7/3) 50%, light gray (10YR 7/1) 15% and yellowish red (5YR 5/8) 15%, common medium prominent reddish yellow (7.5YR 6/8) and common fine prominent yellow (10YR 8/8) and dark yellowish brown manganese oxide nodule (10YR 3/4) mottles; sandy loam; moderate medium and coarse semi-angular blocky structure; slightly sticky and slightly plastic, firm moist, slightly hard dry; very few faint clay coats on pore walls and common faint clay bridges among sand grains; common variegated sands, few iron-manganese oxide

		nodules; few very fine and fine and very few medium vesicular pores; practically no roots; few traces of dead roots; strongly alkaline (field pH 8.5); clear and smooth boundary to Btng5.
Btng5	131-153	Mixed light red (2.5YR 6/6) 50%, pinkish gray (5YR 7/2) 20% and reddish yellow sand grain (5YR 6/8) 10%, common medium prominent reddish yellow (5YR 6/8) and yellow (10YR 7/6) and common fine prominent black manganese oxide nodule (10YR 2/1) mottles; sandy loam; moderate medium and coarse semi-angular blocky structure; moderately sticky and slightly plastic, firm moist, slightly hard dry; very few faint clay coats on pore walls and common faint clay bridges among sand grains; common variegated sands, very few iron-manganese oxide nodules; very few very fine and few fine vesicular pores; practically no roots; strongly alkaline (field pH 8.5); abrupt and smooth boundary to 2Btng6.
2Btng6	153-178	Mixed pink (7.5YR 7/3) 60%, light gray (10YR 7/1) 10%, yellowish red (5YR 5/6) 10% and light gray (10YR 7/2) 5%, common coarse prominent brownish yellow (10YR 6/8), common fine distinct strong brown (7.5YR 5/6) and common medium prominent black manganese oxide nodule (7.5YR 2.5/1) mottles; sandy clay loam; weak coarse angular blocky and semi-massive structure; moderately sticky and moderately plastic, very firm moist, hard dry; common faint clay coats on ped faces and pore walls and common faint clay bridges among sand grains; common variegated sands, some translocated sand patches; few very fine and fine and medium vesicular pores; practically no roots; few large manganese oxide nodules, few clay blocks; strongly alkaline (field pH 8.5); clear and smooth boundary to 2Btng7.
2Btng7	178-200+	Mixed light red (2.5YR 7/6) 40%, reddish brown (2.5YR 4/4) 20%, light gray (10YR 7/1) 10% and (5YR 7/1) 10%, common medium prominent reddish yellow (7.5YR 6/8), yellow (10YR 8/8) and black manganese oxide nodule (7.5YR 2.5/1) mottles; sandy clay loam; weak coarse angular blocky and semi-massive structure; moderately sticky and moderately plastic, firm moist, hard dry; common faint clay coats on ped faces and pore walls and common faint clay bridges among sand grains; common variegated sands, some translocated sand patches; few very fine, common fine and few medium vesicular and few fine tubular pores; practically no roots; strongly alkaline (field pH 8.5).

Pedon 24

I Information on the site

Profile symbol	:	Pedon 24
Soil name	:	Roi Et, saline variant
Classification	:	Typic Natraqualf
Date of examination	:	24 December 2004
Described by	:	Irb Kheoruenromne, Napaporn Wongpokhom, Punyisa Trakoonyingcharoen, Suphicha Thanachit, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Ladawan Nakforn
Location	:	Approximately 100 m West of Sida-bua Yai Road (No. 202) at 6.94 km from Sida Crossroads, Ban Nong Klang Yai, Tambon Kut Chok, Amphoe Bua Yai, Nakhon Ratchasima province
Elevation	:	Approximately 159 m (MSL)
Map sheet number	:	5440 II Coordination: 48 0229610 m E., 1721148 m N.

Landform

1. Physiographic position	:	Erosional plain
2. Surrounding landform	:	Gently undulating
3. Slope on which profile site	:	2%
Land use	:	Paddy rice, left idle under local weeds, salt tolerant species
Annual rainfall	:	Approximately 1100 mm
Mean temperature	:	Approximately 26 ^{o}C
Climate	:	Tropical savanna
Others	:	Salt patches and garbage disposal pond

II General information on the soil

Parent material	:	Wash over residuum derived from weathered clastic sedimentary rocks
Drainage	:	Poorly drained
Permeability	:	Slow
Runoff	:	Slow
Depth of ground water	:	Approximately 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apng	0-12	Mixed dark yellowish brown (10YR 4/4) 35 %, strong brown (7.5YR 5/6) 35% and reddish yellow sand grain (5YR 6/8) 10%, common medium prominent red (2.5YR 4/6) and reddish yellow (5YR 6/8) mottles; sandy loam; strong medium and coarse subangular blocky structure; slightly sticky and slightly plastic, friable moist, slightly hard dry; few variegated sands; few very fine and common fine vesicular pores; many very fine and fine roots; few traces of dead root; neutral (field pH 7.0); clear and smooth boundary to Btng1.
Btng1	12-30	Mixed very pale brown (10YR 7/3) 62 % and reddish yellow (5YR 6/8) 15%, common medium prominent brownish yellow (10YR 6/8), yellowish brown (10YR 5/8), common fine and medium prominent very dark gray manganese oxide (7.5YR 3/1) and common fine prominent reddish yellow root (5YR 6/8)

		mottles; sandy loam; strong medium and coarse semi-angular blocky structure; slightly sticky and slightly plastic, slightly firm moist, hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; common variegated sands; few very fine, fine and medium vesicular pores; common very fine and fine roots; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng2.
Btng2	30-53	Mixed pink (7.5YR 7/3) 50 % very pale brown (10YR 7/3) 20% and reddish yellow (5YR 6/8) 15%, common fine prominent yellow (10YR 8/8), brownish yellow (10YR 6/8), very dark gray manganese oxide (7.5YR 3/1) and dark brown (7.5YR 3/2) mottles; sandy loam; moderate fine and medium semi-angular blocky structure; slightly sticky and slightly plastic, slightly firm moist, slightly hard dry; common faint clay bridges among sand grains; few traces of dead roots and common variegated sands; very few very fine and fine vesicular pores; few very fine and fine roots; with a line of manganese oxide soft nodules; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng3.
Btng3	53-73	Mixed light yellowish brown (10YR 6/4) 62 % and reddish yellow (5YR 6/8) 15%, common fine distinct yellow (10YR 7/6) and dark yellowish brown (10YR 3/4) and common medium distinct yellow (10YR 7/8) mottles; sandy loam; moderate fine and medium semi-angular blocky structure; slightly sticky and slightly plastic, slightly firm moist, slightly hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; common variegated sands; very few very fine, few fine vesicular pores; very few very fine and fine roots; few manganese oxide nodules; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng4.
Btng4	73-100	Mixed pale brown (10YR 6/3) 60 % and yellow (10YR 7/8) 20%, common medium prominent yellowish brown (10YR 5/8) and common fine distinct dark brown (10YR 3/3) mottles; slightly gravelly sandy clay loam; moderate fine and medium semi-angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; common faint clay coats on pore walls and ped faces and few faint clay bridges among sand grains; common variegated sands; very few very fine and few fine vesicular and few fine tubular pores; very few very fine and fine roots; common soft manganese oxide nodules; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng5.
Btng5	100-128	Mixed light brown (7.5YR 6/3) 30 %, pinkish gray (7.5YR 7/2) 25% and reddish yellow (5YR 6/8) 25%, common medium prominent brownish yellow (10YR 6/8) and common fine and medium prominent very dark gray manganese oxide (10YR 3/1) and dark brown (10YR 3/3) mottles; sandy clay loam; moderate fine and medium semi-angular blocky structure; moderately sticky and moderately plastic, very firm moist, very hard dry; common faint clay coats on pore walls and ped faces and few faint clay bridges among sand grains; few traces of dead roots and few variegated sands; few very fine, fine and medium vesicular and few tubular pores; practically no roots; common accumulation of soft manganese oxide nodules; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng6.

2Btng6	128-155	Mixed light brown (7.5YR 6/3) 30 %, pink (7.5YR 7/3) 20% and reddish yellow (5YR 6/8) 15%, many medium prominent brownish yellow (10YR 6/8) and common fine prominent reddish brown (5YR 5/4) mottles; sandy clay loam; weak medium and coarse angular blocky and semi-massive structure; moderately sticky and very plastic, very firm moist, very hard dry; few faint clay coats on pore walls and few faint clay bridges among sand grains; few variegated sands; few very fine, fine and medium vesicular and few tubular pores; practically no roots; few soft manganese oxide nodules; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Crtng.
2Crtng	155-200+	Mixed white (7.5YR 8/1) 20 %, reddish brown (5YR 5/4) 20%, (5YR 4/4) 20%, light gray (7.5YR 7/1) 15% and yellowish red (5YR 4/6) 10%, common fine prominent olive yellow (2.5Y 6/8) and brownish yellow (10YR 6/8) and common fine distinct light brown (7.5YR 6/3) mottles; clay loam (mainly rock texture); weak coarse angular blocky as rock structure; moderately sticky and very plastic, very firm moist, very hard dry; common faint clay coats on pore walls and some ped faces and few faint clay bridges among sand grains; few pressure faces; very few very fine and fine vesicular and few tubular pores; practically no roots; weathered red clastic rock partially retaining original structure; moderately alkaline (field pH 8.0).

Pedon 25

I Information on the site

Profile symbol	:	Pedon 25
Soil name	:	Roi Et, saline variant
Classification	:	Typic Natraqualf
Date of examination	:	25 December 2004
Described by	:	Irb Kheoruenromne, Napaporn Wongpokhom, Punyisa Trakoonyingcharoen, Suphicha Thanachit, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Ladawan Nakforn
Location	:	Approximately 100 m West of Sida-bua Yai Road (No. 202) at 6.88 km from Sida Crossroads, Ban Nong Klang Yai, Tambon Kut Chok, Amphoe Bua Yai, Nakhon Ratchasima province
Elevation	:	Approximately 153 m (MSL)
Map sheet number	:	5440 II Coordination : 48 0229650 m E., 1721099 m N.

Landform

1. Physiographic position	:	Erosional plain
2. Surrounding landform	:	Gently undulating
3. Slope on which profile site	:	2%
Land use	:	Paddy rice and local weeds and trees
Annual rainfall	:	Approximately 1100 mm
Mean temperature	:	Approximately 26 ^{o}C
Climate	:	Tropical savanna
Others	:	Agricultural

II General information on the soil

Parent material	:	Wash over residuum derived from weathered clastic sedimentary rocks
Drainage	:	Poorly drained
Permeability	:	Moderate
Runoff	:	Slow
Depth of ground water	:	Approximately 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apg	0-17/30	Mixed brown (7.5YR 4/2) 90 % and yellowish brown (10YR 5/8) 10%; sandy loam; weak fine and medium subangular blocky structure; slightly sticky and non-plastic, friable moist, soft dry; few variegated sands; many very fine and fine vesicular pores; many very fine and fine roots; few traces of dead roots; neutral (field pH 7.0); wavy and smooth boundary to Bg.
Bg	17-30	Mixed light reddish brown (5YR 6/3) 50%, pink (5YR 7/3) 40% and yellowish red sand grains (5YR 5/8), common fine prominent reddish yellow (7.5YR 6/8) and (5YR 6/8) mottles; sandy loam; weak fine and medium semi-angular blocky structure; slightly sticky and non plastic, very friable moist, soft dry; common variegated sands; common very fine and fine vesicular pores; common very fine and fine roots; few traces of dead roots; slightly acid (field pH 6.5); clear and broken boundary to Btng1.
Btng1	30-52	Pale brown (10YR 6/3), common fine prominent yellowish brown (10YR 5/8) mottles; sandy loam; moderate fine and medium semi-angular blocky structure; slightly sticky and slightly plastic, slightly firm moist, slightly hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; few variegated sands; common very fine and few fine vesicular and few tubular pores; few very fine and fine roots; common traces of dead roots; slightly acid (field pH 6.5); clear and smooth boundary to Btng2.
Btng2	52-71	Light reddish brown (5YR 6/3), common fine prominent yellowish brown (10YR 5/8) and black manganese oxide (5YR 2.5/1) mottles; sandy loam; moderate fine and medium semi-angular blocky structure; slightly sticky and slightly plastic, slightly firm moist, slightly hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; large patches of translocated sands, common variegated sands; common very fine and few fine vesicular and few tubular pores; few very fine and fine roots; few soft manganese oxide nodules, few traces of dead roots; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng3.
Btng3	71-92	Mixed light reddish brown (5YR 6/3) 75% and yellowish red (5YR 5/6) 15%, common fine prominent brownish yellow (10YR 6/8) mottles; sandy loam; moderate fine and medium semi-angular blocky structure; slightly sticky and moderately plastic, slightly firm moist, slightly hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; few variegated

		sands; few very fine and fine vesicular and few tubular pores; very few very fine and fine roots; few soft manganese oxide nodules, few traces of dead roots; moderately alkaline (field pH 8.0); abrupt and smooth boundary to 2BCrng1.
2BCrng1	92-120	Mixed light reddish brown (5YR 6/3) 35%, yellowish red (5YR 5/6) 20% and reddish brown (2.5YR 4/3) 20%, common fine prominent yellow (5Y 7/8) and common fine distinct black (5YR 2.5/1) mottles; clay loam; moderate fine and medium semi-angular blocky structure; slightly sticky and moderately plastic, firm moist, hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; few fine translocated sand patches; few very fine and common fine vesicular and few tubular pores; very few very fine and fine roots; strongly alkaline (field pH 8.5); clear and smooth boundary to 2BCrng2.
2BCrng2	120-143	Mixed reddish brown (2.5YR 4/4) 30%, red (2.5YR 5/6) 25%, light reddish brown (2.5YR 6/4) 20% and yellowish red (5YR 5/6) 10%, common fine prominent ovive yellow (2.5Y 6/8), yellow (5Y 7/8), light red (2.5YR 7/6) and black manganese oxide (5YR 2.5/1) mottles; clay loam; weak medium and coarse semi-angular blocky and semi-massive structure; moderately sticky and moderately plastic, firm moist, very hard dry; common faint clay coats on pore walls and ped faces; few fine translocated sand patches; very few very fine and few fine vesicular and few tubular pores; practically no roots; few traces of dead roots; strongly alkaline (field pH 8.5); clear and smooth boundary to 2BCrg.
2BCrg	143-170	Mixed red (2.5YR 4/6) 35% and reddish brown (2.5YR 4/4) 30%, common medium prominent light greenish gray (5BG 7/1), common fine prominent yellow (5Y 7/8), black manganese oxide (5YR 2.5/1) and yellowish brown (10YR 5/8) mottles; clay; weak medium and coarse semi-angular blocky and semi-massive structure; moderately sticky and very plastic, very firm moist, very hard dry; common faint clay coats on pore walls and ped faces; few fine translocated sand patches, few fine cracks; very few very fine and few fine vesicular and few tubular pores; practically no roots; partially retaining rock structure; strongly alkaline (field pH 8.5); clear and smooth boundary to 2BCrng3.
2BCrng3	170-200+	Mixed red (2.5YR 5/6) 35% and yellowish red (5YR 5/8) 20%, common medium prominent light greenish gray (5GY 7/1), (10G 7/1) and olive yellow (2.5Y 6/8) mottles; clay; weak coarse angular blocky and semi-massive structure; moderately sticky and very plastic, very firm moist, very hard dry; common distinct clay coats on pore walls; very few very fine and few fine and common dendritic tubular pores; practically no roots; partially retaining rock structure; strongly alkaline (field pH 8.5).

Pedon 26

I Information on the site

Profile symbol	:	Pedon 26
Soil name	:	Roi Et, saline variant
Classification	:	Typic Natraqualf
Date of examination	:	25 December 2004
Described by	:	Irb Kheoruenromne, Napaporn Wongpokhom, Punyisa Trakoonyingcharoen, Suphicha Thanachit, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Ladawan Nakforn
Location	:	Approximately 100 m West of Sida-bua Yai Road (No. 202) at 6.82 km from Sida Crossroads, Ban Nong Klang Yai (Don Raeng), Tambon Kut Chok, Amphoe Bua Yai, Nakhon Ratchasima province
Elevation	:	Approximately 166 m (MSL)
Map sheet number	:	5440 II Coordination : 48 0229689 m E., 1721050 m N.

Landform

1. Physiographic position	:	Erosional plain
2. Surrounding landform	:	Gently undulating
3. Slope on which profile site	:	2%
Land use	:	Paddy rice
Annual rainfall	:	Approximately 1100 mm
Mean temperature	:	Approximately 26 ^{o}C
Climate	:	Tropical savanna
Others	:	Agricultural

II General information on the soil

Parent material	:	Wash over residuum derived from weathered clastic sedimentary rocks
Drainage	:	Poorly drained
Permeability	:	Moderate
Runoff	:	Slow
Depth of ground water	:	More than 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apg	0-12/14	Mixed pink (5YR 7/3) 75 % and yellowish red (5YR 5/8) 10%, common fine prominent brownish yellow (10YR 6/8), very dark grayish brown (10YR 3/2) and grayish brown (10YR 5/2) mottles; loamy sand; moderate weak fine and medium subangular blocky structure; non-sticky and non-plastic, very friable moist, soft dry; few fine variegated sands; common very fine and few fine vesicular pores; many very fine and fine and few medium roots; few traces of dead roots; strongly acid (field pH 5.5); clear and smooth boundary to Bng.
Bng	14-31/46	Mixed pink (5YR 7/3) 80 % and yellowish red sand grains (5YR 5/8) 10%, common fine prominent brownish yellow (10YR 6/8) mottles; loamy sand; moderate weak fine and medium semi-angular blocky structure; non-sticky and non-plastic, very friable moist, soft dry; common fine variegated sands; common

		very fine and few fine vesicular pores; common very fine, fine and medium roots; few soft iron oxide nodules; moderately acid (field pH 6.0); clear and wavy boundary to Btng1.
Btng1	46-53	Mixed light reddish brown (5YR 6/3) 80 % and yellowish red (5YR 5/8) 10%, common medium prominent yellow (10YR 7/8) mottles; sandy loam; moderate fine and medium semi-angular blocky structure; slightly sticky and non-plastic, slightly firm moist, slightly hard dry; very few faint clay bridges among sand grains; few variegated sands; very few very fine, few fine vesicular and few tubular pores; common very fine and fine roots; few traces of dead roots; slightly acid (field pH 6.5); clear and smooth boundary to Btng2.
Btng2	53-73	Mixed pink (5YR 7/3) 75 % and yellowish red sand grains (5YR 5/8) 10%, common medium prominent black manganese oxide (7.5YR 2.5/1) and common fine prominent brownish yellow (10YR 6/8) mottles; sandy loam; moderate fine and medium semi-angular blocky structure; slightly sticky and moderately plastic, slightly firm moist, slightly hard dry; few faint clay bridges among sand grains; few variegated sands; very few very fine and few fine vesicular and few tubular pores; few very fine and fine roots, few traces of dead roots; few fine soft manganese oxide nodules; moderately acid (field pH 6.0); clear and smooth boundary to Btng3.
Btng3	73-92	Mixed pink (5YR 7/3) 65 % and yellowish red sand grain (5YR 5/8) 10%, common medium prominent yellowish red (5YR 5/8) and reddish yellow (7.5YR 6/8) mottles; sandy loam; moderate fine and medium semi-angular blocky structure; slightly sticky and moderately plastic, firm moist, slightly hard dry; few faint clay bridges among sand grains; few variegated sands; very few very fine, few fine vesicular and few tubular pores; very few very fine and fine roots; few traces of dead roots, few translocated sand patches; slightly acid (field pH 6.5); abrupt and smooth boundary to 2Btng4.
2Btng4	92-114	Mixed pink (5YR 7/3) 50 % and yellowish red (5YR 5/8) 10%, common medium prominent black manganese oxide (5YR 2.5/1) and reddish yellow (7.5YR 6/8) and common fine prominent red (2.5YR 4/6) mottles; sandy clay loam; moderate fine and medium subangular blocky structure; moderately sticky and moderately plastic, very firm moist, hard dry; few faint clay coats on pore walls and common clay bridges among sand grains; few variegated sands; common very fine and few fine vesicular and few tubular pores; very few very fine and fine roots; few traces of dead roots, common soft manganese oxide nodules; moderately alkaline (field pH 8.0); gradual and smooth boundary to 2Btng5.
2Btng5	114-137	Mixed pinkish gray (7.5YR 7/2) 65 % and yellowish red (5YR 5/8) 10%, common medium prominent reddish yellow (7.5YR 6/8) and very dark gray (10YR 3/1) mottles; sandy clay loam; weak medium and coarse angular blocky and semi-massive structure; moderately sticky and very plastic, very firm moist, hard dry; common faint clay coats on ped faces and pore walls and common clay bridges among sand grains; few variegated sands; common very fine and few fine vesicular and few tubular pores; very few very fine and fine roots; few traces of dead roots, few soft manganese oxide nodules; moderately alkaline (field pH 8.0); gradual and smooth boundary to 2Btng6.

2Btng6	137-164	Mixed light gray (5YR 7/1) 65 %, yellowish red (5YR 5/8) 10% and white clay coats (7.5YR 8/1) 5%, common medium prominent brownish yellow (10YR 6/8) and pink (7.5YR 7/3) mottles; sandy clay loam; weak medium and coarse angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on ped faces and pore walls and common clay bridge among sand grains; few variegated sands; few very fine and fine vesicular and few tubular pores; very few very fine and fine roots; few traces of dead roots; moderately alkaline (field pH 8.0); clear and smooth boundary to 2BCrng.
2BCrng	164-200+	Mixed light gray (10YR 7/1) 55 % and yellowish red (5YR 5/8) 10%, common medium prominent brown (7.5YR 4/4), yellow (10YR 8/6), pink (7.5YR 7/3) and reddish brown (5YR 4/3) mottles; clay loam; weak coarse angular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on pore walls and ped faces and few faint clay bridges among sand grains; few variegated sands, few fine cracks; few very fine and fine vesicular and few tubular pores; very few very fine and fine roots; moderately alkaline (field pH 8.0); clear and smooth boundary to 2BCng.

Pedon 27

I Information on the site

Profile symbol	:	Pedon 27
Soil name	:	Roi Et, saline variant
Classification	:	Typic Natraqualf
Date of examination	:	25 December 2004
Described by	:	Irb Kheoruenromne, Napaporn Wongpokhom, Punyisa Trakoonyingcharoen, Suphicha Thanachit, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Ladawan Nakforn
Location	:	Approximately 100 m West of Sida-bua Yai Road (No. 202) at 6.76 km from Sida Crossroads, Ban Nong Klang Yai (Don Raeng), Tambon Kut Chok, Amphoe Bua Yai, Nakhon Ratchasima province
Elevation	:	Approximately 158 m (MSL)
Map sheet number	:	5440 II Coordination : 48 0229723 m E., 1721000 m N.

Landform

1. Physiographic position	:	Erosional plain
2. Surrounding landform	:	Gently undulating
3. Slope on which profile site	:	2%
Land use	:	Paddy rice
Annual rainfall	:	Approximately 1100 mm
Mean temperature	:	Approximately 26 ^{o}C
Climate	:	Tropical savanna
Others	:	Agricultural

II General information on the soil

Parent material	:	Wash over residuum derived from weathered clastic sedimentary rocks
Drainage	:	Poorly drained
Permeability	:	Slow
Runoff	:	Slow
Depth of ground water	:	Approximately 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apng	0-20/22	Mixed brown (7.5YR 5/4) 85 %, yellowish red sand grain (5YR 5/8) 10% and very dark gray (10YR 3/1) 5%; loamy sand; weak fine and medium subangular blocky structure; non-sticky and non-plastic, very friable moist, soft dry; very few variegated sands; few very fine, common fine and few medium vesicular pores; many very fine and fine and common medium roots; slightly acid (field pH 6.5); clear and smooth boundary to Bg.
Bg	22-40	Mixed pink (5YR 8/4) 90 % and yellowish red sand grain (5YR 5/8) 10%; loamy fine sand; weak fine and medium subangular blocky structure; non-sticky and non-plastic, very friable moist, soft dry; few variegated sands; common very fine and fine and few medium vesicular pores; few very fine, fine and medium roots; neutral (field pH 7.0); clear and smooth boundary to Bng.
Bng	40-58	Mixed pink (5YR 7/4) 90 % and yellowish red sand grains (5YR 5/8) 10%; loamy fine sand; weak fine and medium subangular blocky structure; non-sticky and non-plastic, very friable moist, soft dry; few variegated sands; common very fine and fine vesicular pores; few very fine and fine roots; neutral (field pH 7.0); abrupt and smooth boundary to Btng1.
Btng1	58-82	Mixed light reddish brown (5YR 6/3) 77 % and yellowish red sand grains (5YR 5/8) 10%; common fine prominent yellow (10YR 7/8) and yellowish brown (10YR 5/8) and common medium distinct black manganese oxide (5YR 2.5/1) mottles; sandy loam; moderate medium and coarse semi-angular blocky structure; slightly sticky and slightly plastic, slightly firm moist, hard dry; few faint clay bridges among sand grains; common variegated sands; few very fine and fine and medium vesicular pores; few very fine and fine roots; common traces of dead roots, few soft manganese oxide nodules; neutral (field pH 7.0); clear and smooth boundary to Btng2.
Btng2	82-104	Mixed pinkish gray (7.5YR 7/2) 70 % and yellowish red sand grains (5YR 5/8) 10%; common medium prominent red (2.5YR 5/8), yellow (10YR 7/8) and black manganese oxide (5YR 2.5/1) mottles; sandy loam; moderate medium and coarse semi-angular blocky structure; slightly sticky and moderately plastic, slightly firm moist, hard dry; very few faint clay coats on pore walls and common clay bridge among sand grains; common variegated sands; few very fine and fine and medium vesicular pores; few very fine and fine roots; common traces of dead roots and very few soft manganese oxide nodules; neutral (field pH 7.0); clear and smooth boundary to Btng3.

Btng3	104-122	Mixed pinkish gray (7.5YR 7/2) 55 % and yellowish red sand grain (5YR 5/8) 10%; common medium prominent yellowish red (5YR 5/8) and yellow (10YR 7/8) and common fine prominent reddish yellow (7.5YR 6/8) and black manganese oxide (5YR 2.5/1) mottles; sandy clay loam; moderate medium and coarse subangular blocky structure; slightly sticky and moderately plastic, firm moist, slightly hard dry; very few faint clay coats on pore walls and common clay bridges among sand grains; common variegated sands; very few very fine, few fine and medium vesicular pores; very few very fine and fine roots; many traces of dead roots and few soft manganese oxide nodules; neutral (field pH 7.0); clear and smooth boundary to Btng4.
Btng4	122-143	Mixed pinkish gray (7.5YR 7/2) 70 % and yellowish red sand grains (5YR 5/8) 10%; common medium prominent strong brown (7.5YR 5/8), common medium distinct brown (7.5YR 4/2), common fine prominent very dark gray (5YR 3/1) and black manganese oxide (5YR 2.5/1) mottles; sandy clay loam; moderate medium and coarse semi-angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; very few faint clay coats on pore walls and common clay bridges among sand grains; few variegated sands; very few very fine, common fine and few medium vesicular pores; very few very fine and fine roots; many traces of dead roots, few fine soft manganese oxide nodules; neutral (field pH 7.0); clear and smooth boundary to Btng5.
Btng5	143-160	Mixed pinkish gray (7.5YR 6/2) 65 % and yellowish red sand grains (5YR 5/8) 10%; common medium prominent brownish yellow (10YR 6/8), common fine prominent very dark gray manganese oxide (5YR 3/1) and black root (5YR 2.5/1) mottles; sandy clay loam; moderate medium and coarse semi-angular blocky structure; moderately sticky and moderately plastic, firm moist, hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; few variegated sands; very few very fine, common fine and few medium vesicular and common tubular pores; practically no roots; few patches of translocated sands; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btng6.
2Btng6	160-180	Mixed pinkish gray (7.5YR 6/2) 75 % and yellowish red sand grains (5YR 5/8) 10%; common medium prominent brownish yellow (10YR 6/8) mottles; sandy clay loam; weak coarse angular blocky and semi-massive structure; moderately sticky and very plastic, firm moist, very hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; few variegated sands; very few very fine, few fine and medium vesicular and few tubular pores; practically no roots; traces of dead roots; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btng7.
2Btng7	180-202+	Mixed pinkish gray (5YR 7/2) 35 %, pink (5YR 7/4) 20% and yellowish red sand grains (5YR 5/8) 10%; many medium prominent brownish yellow (10YR 6/8) and common fine prominent very dark gray (10YR 3/1) mottles; sandy clay loam; weak coarse angular blocky and semi-massive structure; moderately sticky and very plastic, firm moist, very hard dry; few faint clay coats on pore walls and common faint clay bridges among sand grains; few variegated sands, few fine cracks; few very fine, fine and medium vesicular and tubular pores; practically no roots; traces of dead roots; moderately alkaline (field pH 8.0).

Pedon 28

I Information on the site

Profile symbol	:	Pedon 28
Soil name	:	Roi Et, saline variant
Classification	:	Typic Natraqualf
Date of examination	:	25 December 2004
Described by	:	Irb Kheoruenromne, Napaporn Wongpokhom, Punyisa Trakoonyingcharoen, Suphicha Thanachit, Nuttaphorn Prakongkep, Krichsana Ramsoot, Saranya Norkaew and Ladawan Nakforn
Location	:	Approximately 100 m West of Sida-bua Yai Road (No. 202) at 6.70 km from Sida Crossroads, Ban Nong Klang Yai (Don Raeng), Tambon Kut Chok, Amphoe Bua Yai, Nakhon Ratchasima province
Elevation	:	Approximately 161 m (MSL)
Map sheet number	:	5440 II Coordination: 48 0229752 m E., 1720945 m N.

Landform

1. Physiographic position	:	Erosional plain
2. Surrounding landform	:	Gently undulating
3. Slope on which profile site	:	2%
Land use	:	Paddy rice
Annual rainfall	:	Approximately 1100 mm
Mean temperature	:	Approximately 26 ^{o}C
Climate	:	Tropical savanna
Others	:	Agricultural

II General information on the soil

Parent material	:	Wash over residuum derived from weathered clastic sedimentary rocks
Drainage	:	Poorly drained
Permeability	:	Moderate
Runoff	:	Slow
Depth of ground water	:	More than 200 cm at time of sampling

III Profile description

Horizon	Depth (cm)	Description
Apng	0-10/13	Light brown (7.5YR 6/3), common medium distinct dark gray (7.5YR 4/1) and common fine prominent reddish yellow (7.5YR 6/8) mottles; loamy sand; weak fine and medium subangular blocky structure; non-sticky and non-plastic, very friable moist, soft dry; few fine variegated sands; common very fine and fine and few medium vesicular pores; many very fine, fine and few medium and coarse roots; few traces of dead roots; slightly acid (field pH 6.5); clear and smooth boundary to Bng.
Bng	13-30	Mixed pink (5YR 7/4) 85% and reddish brown (5YR 5/3) 10%, common fine prominent yellow (10YR 8/6) mottles; loamy sand; weak fine and medium subangular blocky structure; non-sticky and non-plastic, very friable moist, soft dry; common variegated sands; common very fine and fine and few medium

		vesicular pores; few very fine and fine roots; common traces of dead roots; slightly acid (field pH 6.5); abrupt and smooth boundary to Btng1.
Btng1	30-44	Mixed light brown (7.5YR 6/4) 75% and yellowish red (5YR 5/8) 10%, common fine prominent black (10YR 2/1) and common fine distinct yellow (10YR 8/6) mottles; sandy loam; moderate medium and coarse angular blocky structure; slightly sticky and slightly plastic, friable moist, slightly hard dry; few faint clay bridges among sand grains; common variegated sands, common soft manganese oxide nodules; common very fine and fine vesicular and few tubular pores; few very fine and fine roots; traces of dead roots; slightly acid (field pH 6.5); clear and smooth boundary to Btng2.
Btng2	44-66	Mixed light brown (7.5YR 6/4) 75% and yellowish red (5YR 5/8) 10%, common medium distinct strong brown (7.5YR 5/8) and common fine prominent yellow (10YR 8/6) mottles; sandy loam; moderate medium and coarse subangular blocky structure; slightly sticky and slightly plastic, friable moist, slightly hard dry; common faint clay bridges among sand grains; common variegated sands; few very fine, common fine and medium vesicular pores; few very fine and fine roots; neutral (field pH 7.0); gradual and smooth boundary to Btng3.
Btng3	66-86	Mixed pink (7.5YR 7/4) 85% and yellowish red (5YR 5/8) 10%, common fine prominent yellow (10YR 8/6) mottles; sandy loam; moderate weak medium and coarse semi-angular blocky structure; slightly sticky and slightly plastic, slightly firm moist, slightly hard dry; few faint clay bridges among sand grains; few variegated sands; few very fine, common fine and medium vesicular pores; few very fine and fine roots; neutral (field pH 7.0); clear and smooth boundary to Btng4.
Btng4	86-107	Mixed pink (7.5YR 7/3) 75% and yellowish red sand grains (5YR 5/8) 10%, common medium distinct very dark gray (7.5YR 3/1) and common fine prominent yellow (10YR 7/8) mottles; sandy loam; moderate weak medium and coarse semi-angular blocky structure; slightly sticky and slightly plastic, slightly firm moist, slightly hard dry; common faint clay bridges among sand grains; common variegated sands; few very fine, common fine and medium vesicular pores; few very fine, fine and very few medium roots; common soft manganese oxide nodules; moderately alkaline (field pH 8.0); clear and smooth boundary to Btng5.
Btng5	107-138/144	Mixed pink (7.5YR 7/3) 55% and yellowish red sand grains (5YR 5/8) 10%, many medium prominent very dark gray (7.5YR 3/1) and yellow (10YR 8/6) mottles; sandy loam; moderate fine and medium subangular blocky structure; moderately sticky and moderately plastic, firm moist, very hard dry; common faint clay bridges among sand grains and few faint clay coats on pore walls; common variegated sands; very few very fine, few fine and medium vesicular pores; very few very fine and fine roots; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btng6.

2Btng6	144-168	Mixed light brown (7.5YR 6/3) 50% and yellowish red sand grains (5YR 5/8) 10%, common medium prominent yellow (10YR 8/8) and brownish yellow (10YR 6/8) mottles; sandy clay loam; moderate medium and coarse semi-angular blocky structure; moderately sticky and very plastic, firm moist, very hard dry; few faint clay coats on ped faces and pore walls and common faint clay bridges among sand grains; patches of variegated sands; few very fine, fine and medium vesicular and few tubular pores; very few very fine and fine roots; moderately alkaline (field pH 8.0); clear and smooth boundary to 2Btng7.
2Btng7	168-200+	Gray (10YR 6/1), common medium prominent yellowish brown (10YR 5/8) and yellow (10YR 7/8) and common medium distinct very dark grayish brown (10YR 3/2) mottles; very fine sandy clay; weak coarse subangular blocky and semi-massive structure; very sticky and very plastic, very firm moist, very hard dry; common faint clay coats on pore walls; few variegated sands, few fine cracks; few very fine, fine and medium vesicular and tubular pores; practically no roots; moderately alkaline (field pH 8.0).

APPENDIX B

SOIL MICROMORPHOLOGICAL DESCRIPTION

Location 1 Sandy textured salt affected soils (Re-sa1)

Pedon 1

Horizon	Depth (cm)	Description
Apng	0-12	Microstructure Compact grain structure; voids mainly are simple packing voids and few vughs and channels (50-200 μm width); total porosity about 25% of total area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 95:5. Coarse fraction: The mineral grains mostly are single quartz grains, silt to medium sand size (20-500 μm), subangular to subrounded; few runi-quartz and broken quartz, rare zircon; moderately sorted. Fine fraction: Yellowish brown to brown, clay to fine silt sized material, locally bridged or surrounded quartz grains, dotted appearance under transmitted light. Basic organic component Common organic pigment and punctuation, the highly decomposed plant tissue residues are rare. Groundmass The c/f distribution pattern is nearly sand monic, the b-fabric of the micromass is undifferentiated and very few granostriated. Pedofeature Crystalline pedofeature: About 5% of impure halite (20-100 μm) present as individual crystal locally crystallized in simple packing voids and about 2% of carbonate material locally bridged the mineral grains. Textural pedofeature: About 1% of illuviated clay present as thin yellowish brown clay coating, coated on grain and on the wall of voids.
Bng	12-37	Similar to the Apng horizon but total porosity is decrease to cover about 15-20% of total area. The organic components could not be observed. The impure halite, the carbonate material and the textural clay increase to present about 7-8%.
Btng2	60-76	Similar to above horizon but the b-fabric of the micromass is increase in granostriated and porostriated. The impure halite crystallized in voids and coated on grains decrease to 3-4%. The amorphous pedofeature shows very few fragments of iron oxide impregnative nodules (sized 1000 μm) irregular shape with sharp boundaries. The textural clay, white to pale yellow, present about 1-2%.
Btng4	100-128	Similar to above horizon, but the coarse fractions are slightly decrease, c/f ratio limit at 10 μm is approx 90:10. The impure halite crystallized in voids and coated on grains increase to 5%. The amorphous pedofeature shows iron oxide impregnative nodules (sized 0.7-1.5 mm) with sharp boundaries, present about 1-2% of thin section area.
2Btng6	140-170	Microstructure Bridged grain structure; voids are mainly vughs and simple packing voids; total porosity about 15% of total area.

Basic mineral component

The c/f ratio limit at 10 μm, ratio of 85:15.
Coarse fraction: Quartz grains are very dominant, size range from silt to medium sand size (20-400 μm), subangular to subrounded; few runi-quartz and broken quartz; moderately sorted.

Fine fraction: Yellowish brown to brown, clay to fine silt sized material, dotted and speckled appearance under transmitted light.

Groundmass

The c/f distribution pattern is gefuric, the b-fabric of the micromass is granostriated, few porostriated and stipple-speckled.

Pedofeature

Crystalline pedofeature: About 3% of impure halite disseminated in voids.
Textural pedofeature: About 2-4% the yellowish brown to dark brown clay mixed with iron oxide coatings occur on the wall of voids and surrounded nodules.
Amorphous pedofeature: About 8-10% of manganiferrous impregnative nodules (sized 0.5-5 mm) with sharp boundaries.

Pedon 2

Horizon	Depth (cm)	Description
Apng	0-20	Microstructure Compact grain structure; voids mainly are simple packing voids and vughs; total porosity is about 30-35% of total area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 92:8. Coarse fraction: Quartz grains are very dominant, silt to medium sand size (20-500 μm), mainly are very fine sand to fine sand (50-200 μm), subangular to subrounded; few chert, runi-quartz and broken quartz; moderately sorted. Fine fraction: Pale yellowish brown clay to fine silt sized material, dotted appearance under transmitted light. Basic organic component Few slightly decomposed plant tissue residues. Groundmass The c/f related distribution pattern is nearly sand monic, the b-fabric of the micromass is undifferentiated. Pedofeature Crystalline pedofeature: About 5% of impure halite (20-100 μm) present as individual crystal locally crystallized in voids. Textural pedofeature: <1% of very thin, yellowish brown, clay coating coated on grain.
Btng1	20-34	The fine fraction is slightly increase, c/f ratio is approx 90:10, total porosity decrease to cover about 15% of total area, rare tourmaline could be observed. The b-fabric of micromass is undifferentiated and very few granostriated. The amorphous pedofeature shows 2% of iron oxide concentric nodules (sized 0.5-3.2 mm), with sharp boundaries.
Btng3	55-80	Microstructure Compact grain structure grading to bridged grain structure, voids are mainly vughs, visicle (100-150 μm diameter), simple packing voids and planar voids (10-20 μm width); total porosity is about 20% of total area.

		Basic mineral component The c/f ratio limit at 10 μm, ratio of 85:15. The coarse and fine fractions are similar to above horizon, but the amount of clay slightly increases. Basic organic component Very few decomposed plant tissue residues. Groundmass The related distribution pattern is close porphyric, the b-fabric of the micromass is weakly stipple speckled, few porostriated and very few granostriated. Pedofeature Crystalline pedofeature: About 3% of impure halite (10-60 μm) crystallized in voids. Textural pedofeature: Yellowish brown clay and clay mixed with iron oxide coatings occur on quartz grains and on the wall of voids covering about 1%. Amorphous pedofeature: The dark brown to black manganiferrous impregnative nodules (sized 0.5-3 mm) with sharp boundaries, present about 3% of the area of the slide.
Btng5	109-130	Microstructure is bridged grain structure, voids are mainly vughs, few vesicles (50-100 μm) and channels (100-150 μm); total porosity is about 20% of total area. The mineral component similar to above horizon, but quartz grains are increase in size (up to 600 μm) and decrease in amount, c/f ratio limit at 10 μm = 75:25. The organic component could not be observed. The c/f related distribution is close porphyric, the b-fabric of the micromass is weakly stipple speckled, few grano-porostriated. The crystalline pedofeatures are the impure halite crystallized in voids increase to present about 4% and show coating on grains and on the wall of voids. The amorphous pedofeature is iron oxide impregnative nodules (sized 0.5-1.5 mm) with sharp boundaries, and present less than 1%.
Btcng	130-142	Similar to above horizon but the coarse fractions are increase in size (up to 800 μm). The yellowish brown clay coatings increase to cover about 5%. The iron oxide impregnative nodules increase in size (up to 9 mm) and amount, with sharp boundaries, and present about 5-10%.
2Btng6	142-175	Similar to above horizon but present of rare tourmaline and zircon. The amount of clay slightly increases, c/f ratio limit at 10 μm, ratio of 70:30. The related distribution pattern is close to open porphyric, the b-fabric of the micromass is stipple-speckted and few granostriated. The impure halite crystallized in voids and coatings are slightly increase. The iron oxide impregnative nodules decrease in size (0.5-3 mm), with sharp boundaries, and present about 2%.

Pedon 3

Horizon	Depth (cm)	Description
Apg	0-12	Microstructure Complex structure which consist of compact grain structure and locally show bridged grain structure, voids mainly are vughs and vesicles (200-500 μm diameter), few planar voids (10-30 μm width); total porosity is about 30% of the total area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 80:20. Coarse fraction: Single quartz grains are very dominant, silt to coarse sand size (20-600 μm), mainly are in very fine sand to fine sand size (50-150 μm), subangular to subrounded; few runi-quartz and broken quartz; poorly sorted. Fine fraction: Pale grayish brown, clay to fine silt sized material, dotted appearance under transmitted light. Basic organic component Generally are the organic pigment staining to the micromass, few slightly to moderately decomposed plant tissue residues. Groundmass The c/f related distribution pattern is close to open prophyric, few gefuric, the b-fabric of the micromass is stipple-speckted. Pedofeature Crystalline pedofeature: About 2% of impure halite (20-60 μm) present as individual crystal locally crystallized in voids and coated on the wall of voids. Textural pedofeature: About 3% of silty clay coatings and infillings.
Btng	25-48/52	Similar to above horizon but the microstructure is dominant intergrain channels structure, voids are mainly channels (150-350 μm width), few vughs; total porosity is about 20-25% of the total area. Quartz grains decrease in size, mainly are very fine sand (15-100 μm) and rare zircon. The c/f related distribution pattern is close to open prophyric, the b-fabric of the micromass is stipple-speckted and few porostriated. The impure halite (20-50 μm) present as individual crystal locally crystallized in voids and coated on the wall of voids decrease to cover about 2-3%. About 2% of silty clay infillings. The amorphous pedofeature shows manganiferrous impregnative nodules (sized 0.5-8 mm), with sharp boundaries and present about 5-10% of thin section area.
Btg2	52-80/85	Similar to Btng horizon but the coarse fractions are slightly decrease, c/f ratio is approx 85:15. Quartz grains increase in size, mainly are very fine sand to fine sand (50-150 μm). The impure halite (20-50 μm) present as individual crystal locally crystallized in voids and coated on the wall of voids decrease to cover about 2%. About 1% of pale yellowish brown, thin clay coating coated on the wall of voids. The amorphous pedofeature shows iron oxide impregnative nodules (sized 0.5-1.5 mm), with sharp boundaries present about 1% of thin section area.
Btg4	110-130	Similar to above horizon but microstructure is bridged grain structure; voids are mainly simple packing voids and few vughs and few visicles; total porosity is about 20% of total area. Quartz grains which are in very coarse sand size present about 2%. About 1-2% of yellowish brown clay coating coated on the wall of voids and on grains. The amorphous pedofeature shows iron oxide impregnative s-matrix, present about 1% of thin section area.

2Btg6	153-180	Microstructure Bridged grain structure and locally shows pellicular grain structure, voids are mainly vughs, vesicles, and simple packing voids; total porosity is about 20% of the total area. Basic mineral component Similar to Btg4 horizon but the fine material is yellowish brown to brown clay sized material. Groundmass The c/f related distribution pattern is mixed of gefuric and chitonic, the b-fabric of the micromass is gronostriated and porostriated. Pedofeature The textural pedofeatures, pale yellowish brown thin clay coatings, are slightly increase (cover about 2-4% of the area of the thin section) but the amorphous pedofeature, could not be observed.

Pedon 4

Horizon	Depth (cm)	Description
Apng	0-20	Microstructure Dominant intergrain channels structure; voids mainly are channels (50-800 μm width), few vughs and vesicles (150-500 μm diameter); total porosity is about 15-20% of total area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 60:40. Coarse fraction: Dominant single quartz grains (10-400 μm), mainly are in 40-100 μm, subangular and subrounded; few runi-quartz and broken quartz, moderately sorted. Fine fraction: Grayish brown, clay to fine silt sized materials, dotted and speckle appearance under transmitted light. Basic organic component Generally are organic pigment and punctuation, few slightly decomposed plant tissue residues. Groundmass The c/f distribution pattern is open prophyric, the b-fabric of the micromass is stipple-specked. Pedofeature Crystalline pedofeature: About 1% of impure halite (10-40 μm) present as individual crystal locally crystallized in voids.
Btg1	48-70	Microstructure Bridged grain structure, voids mainly are vughs and simple packing voids; total porosity is slightly increase to cover about 25% of total area. Basic mineral component The /f ratio limit at 10 μm, ratio of 90:10. Coarse fraction: Dominant single quartz grains (15-500 μm), mainly are in 50-150 μm, subangular and subrounded; few runi-quartz and broken quartz moderately sorted, rare tourmaline. Fine fraction: Yellowish brown to brown, clay to fine silt sized material, dotted appearance under transmitted light.

		Groundmass The c/f distribution pattern is gefuric, the b-fabric of the micromass is stipple-specked and very few granostriated. Pedofeature Textural pedopeature shows thin clay coat on grains and the wall of voids about 1%. The crystalline pedofeature as impure halite (10-60 μm) crystallized in voids, cover about 2%.
Btng2	95-130	Similar to above horizon but the voids mainly are channels (500-1500 μm width), vughs and few vesicles; total porosity about 30% of the total area. The fine fractions slightly increase, c/f ratio approx 85:15. The c/f relate distribution pattern is close prophyric, the b-fabric of the micromass is weakly stipple speckled few granostriated and very few porostriated. Textural pedopeature shows dark brown clay mixed with iron oxide coat on grains and the wall of voids, occupy about 2%. The crystalline pedofeature as impure halite (20-60 μm) crystallized in voids, cover about 1-2%.
Btng3	130-148/150	Similar to above horizon but the voids mainly are vughs, and few planar voids (10-30 μm width); total porosity decrease to cover about 15% of the total area. The organic material shows few of moderately decomposed plant tissues. The c/f distribution pattern is close prophyric and few gefuric. Textural pedopeature shows yellowish brown clay and clay mixed with iron oxide coat on grains and the wall of voids, occupy about 3-4%.
2Btng4	150-180	Similar to above horizon but the textural pedopeature shows yellowish brown clay coat on grains and the wall of voids, cover about 2%. The crystalline pedofeature increase to present about 3-4% as impure halite (20-60 μm) crystallized in voids. The amorphous pedofeature are manganiferrous impregnative s-matrix and locally shows impregnative nodules (sized 0.5-2 mm) with sharp boundaries, present about 10% of thin section area.

Pedon 5

Horizon	Depth (cm)	Description
Apng	0-20	Microstructure Dominant intergrain channels structure; voids mainly are vughs and channels (100-250 μm width); total porosity is about 20% of total area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 75:25. Coarse fraction: Dominant single quartz grains (20-500 μm), mainly are in 50-100 μm, subangular and subrounded; few runi-quartz and broken quartz moderately sorted, rare zircon. Fine fraction: Pale grayish brown, clay to fine silt sized material, dotted and speckle appearance under transmitted light. Basic organic component Generally are the organic pigment staining to the micromass, very few slightly to moderately decomposed plant tissue residues. Groundmass The c/f distribution pattern is close prophyric, the b-fabric of the micromass is weakly stipple-specked to undifferentiated.

		Pedofeature Crystalline pedofeature: About 2% of impure halite (20-60 μm) present as individual crystal locally crystallized in voids. Amorphous pedofeature: About 2% of manganiferrous impregnative nodules (sized 0.9-1 mm) with sharp boundaries.
Btg1	20-40	Similar to above horizon but the channels voids increase in size (50-1500 μm width). The single quartz grains decrease in size (20-400 μm), mainly are in 15-100 μm. The organic pigment is slightly decrease and present few slightly decomposed plant tissues residues. The c/f distribution pattern is open to close prophyric, the b-fabric of the micromass is stipple-specked. The textural pedofeature shows about 1-2% of yellowish brown to reddish brown clay coat on grain and the wall of voids. The crystalline pedofeature show about 2% of impure halite (10-60 μm) present as individual crystal locally crystallized in voids. The amorphous pedofeature show reddish brown iron oxide impregnate s-matrix occupy about 1-2% of the area of the slide.
Btg2	40-70	Similar to above horizon but microstructure is dominant bridged grain structure. The channels voids decrease in size (150-650 μm width. The fine fractions slightly decrease and present the yellowish brow to brown color, c/f ratio approx 85:15. The c/f distribution pattern is close prophyric and few gefuric, the b-fabric of the micromass is weakly stipple-specked very few gronostriated and porostriated. The yellowish brown to reddish brown clay coat on grains and the wall of voids are slightly increase to cover about 2-3%. The impure halite (10-60 μm) present as individual crystal locally crystallized in voids, present about 5% of thin section areas. The amorphous pedofeatures are not present.
Btg4	90-112	Similar to above horizon but the textural pedopeature shows yellowish brown to dark brown clay coat on grains and the wall of voids increase to cover about 3-4%.
Btg6	140-170	Similar to above horizon but the yellowish brown clay coat on grains and the wall of voids increase to present about 5%. The amorphous pedofeatures present as iron oxide coating or capping on grains, and cover about 2-4% of the area of the thin section.

Location 2 Clayey textured salt affected soils (Pm)

Pedon 6

Horizon	Depth (cm)	Description
Apng1	0-10	Microstructure Dominant channels structure mixed with weakly to moderately developed subangular blocky structure; voids mainly are channels (50-250 μm width), few planar and vughs; total porosity about 20% of the thin section area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 30:70. Coarse fraction: The mineral grains mostly are quartz grains, range from silt to medium sand size (25-500 μm), mainly are very fine sand size and few medium sand size, subangular to subrounded; few runi-quartz, rare zircon and tourmaline, few highly weathered sandstone rock fragment; moderately sorted. Fine fraction: dark brown to pale brown, clay to fine silt sized material dotted and speckled appearance under transmitted light. Basic organic component Few amorphous organic fine materials, very few slightly to moderately decomposed plant tissue residues. Groundmass The c/f distribution pattern is open porphyric, the b-fabric of the micromass is stipple speckled b-fabric to undifferentiated. Pedofeature Crystalline pedofeature: about 5% of the area shows crypto-to microcrystalline halite coating on the wall of voids. Amorphous pedofeature: the reddish brown to dark brown iron oxide concentric nodules (sized 0.5-3.5 mm) with sharp boundaries and present about 2% of the thin section area.
Btng1	20-33	Microstructure is similar to the Apng1 horizon, with few vesicles (50-100 μm width) and interconnected vughs, total porosity is about 25% of area. The fine fraction is grayish brown to pale brown clay. The textural pedofeature is pale yellow clay coatings and infillings on the wall of voids and grains cover about 5% of area. The crystalline pedofeature, halite coating on the wall of voids, decrease to cover about 1%. The amorphous pedofeatures are reddish brown iron oxide concentric nodules (sized 1-6 mm), sometimes show iron oxide impregnative nodules (sized 0.7-1.5 mm) with sharp boundaries, present about 10% of the thin section area.
Btng3	48-70	Similar to the above horizon, but total porosity is about 15%. The fine fraction is pale brown to yellowish brown clay. The c/f distribution pattern is close to open porphyric, the b-fabric of the micromass is few porostriated and granostriated. The crystalline pedofeature; shows halite coating on the wall of voids about 1% and prismatic gypsum cluster about 2%. The amorphous iron oxide nodules increasing from the above horizon to cover about 10-15% of the thin section area.
Btng4	70-88	Similar to the above horizon, the crystalline pedofeatures show prismatic gypsum cluster about 2%. The amorphous iron oxide impregnative nodules (sized 0.6-2 mm), strongly impregnated, some nodules show concentric structure with sharp boundaries, present about 5-10% of the thin section area.

2Btng5	88-114	Similar to the above horizon, the c/f ratio is about 40:60. The crystalline pedofeature halite coating on the wall of voids, present about 1%. The amorphous consist of manganiferous and iron oxide impregnative nodules (sized 0.5-2 mm), weakly to strongly impregnated, sharp to diffuse boundaries, present about 10% of the thin section area.
2Btng7	135-156	Similar to the above horizon, the c/f ratio is about 50:50. The textural pedofeature is pale yellowish brown illuviated clay, thin to thick coating, limpid aspect present about 1-2%. The amorphous iron oxide nodules decreasing from the above horizon to cover about 1% of the thin section area.

Pedon 7

Horizon	Depth (cm)	Description
Apg1	0-18	Microstructure Dominant channels structure mixed with weakly developed subangular blocky structure; voids mainly are channels (20-400 μm width), common vughs and few planar voids; total porosity about 20% of the thin section area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 20:80. Coarse fraction: The mineral grains mostly are quartz grains, range from silt to medium sand size (25-500 μm), mainly are very fine sand size and few medium sand size, subangular to subrounded; few runi-quartz, rare zircon and tourmaline; moderately sorted. Fine fraction: dark brown to pale brown, clay to fine silt sized material dotted and speckled appearance under transmitted light. Basic organic component Common organic pigment, very few fresh plant tissue and slightly to moderately decomposed plant tissue residues. Groundmass The c/f distribution pattern is open porphyric, the b-fabric of the micromass is stipple speckled b-fabric and few porostriated b-fabric. Pedofeature Crystalline pedofeature: about 2% of the area shows halite coating on the wall of voids. Amorphous pedofeature: the reddish brown to dark brown iron oxide impregnative nodules, (sized 0.6-2.0 mm), moderately to strongly impregnated, some nodules show concentric and typic structure with sharp boundaries, present about 2-4% of the thin section area.
Btg	30-42	Microstructure is similar to the Apg1 horizon, with few vesicles (50-100 μm width), total porosity is about 25%. Few organic pigment, very few highly decomposed plant tissues residues. The textural pedofeature is pale yellow clay coatings on the wall of voids, occupy about 2-4%. The amorphous pedofeatures are reddish brown iron oxide concentric nodules (sized 1.0-3.5 mm), sometimes show iron oxide impregnative nodules (sized 1-2 mm), strongly impregnated with sharp boundaries, present about 5% of the thin section area.

Btng1	42-53/64	Similar to the above horizon, but some voids show few planar voids, total porosity is about 20% of area. The fine fraction, brown to yellowish brown clay. The textural pedofeature is pale yellow clay coatings and infillings cover about 2-4%. The crystalline pedofeature shows halite coating on the wall of voids about 1%. The amorphous pedofeature is reddish brown to dark brown iron oxide impregnative nodules (sized 0.2-3 mm), strongly impregnated, some nodules show concentric structure with sharp boundaries, present about 2% of the thin section area.
Btng2	64-79	Similar to the above horizon, the fine fraction is grayish brown to yellowish brown clay. The amorphous iron oxide impregnative nodules (sized 1-2 mm), strongly impregnated, some nodules show concentric and typic structure with sharp boundaries, present about 5-10% of the thin section area.
Btng4	100-124	Similar to the above horizon, the c/f ratio is about 30:70. The textural pedofeature is pale yellow clay coatings and infillings on the wall of voids about 5%. The amorphous iron oxide nodules decreasing from the above horizon to cover about 1% of the thin section area.
2Btng6	151-176	Similar to the above horizon, the fine fraction is light gray to yellowish brown clay. The textural is pale yellowish brown illuviated clay, thin to thick coating, limpid aspect, and strongly oriented. The amorphous iron oxide impregnative nodules, weakly to strongly impregnated, sharp to diffuse boundaries, various size and shape, present about 15% of the thin section area.

Pedon 8

Horizon	Depth (cm)	Description
Apg	0-11	Microstructure Moderately developed subangular blocky structure, voids mainly are planar voids (10-50 μm width) few vughs, interconnected vughs and channels (50-100 μm width); total porosity about 20% of the thin section area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 20:80. Coarse fraction: The mineral grains mostly are quartz grains, rang from silt to medium sand size (25-500 μm), mainly are very fine sand size and few medium sand size, subangular to subrounded; few runi-quartz, rare zircon and tourmaline; moderately sorted. Fine fraction: dark brown to pale brown, clay to fine silt sized material, dotted and speckled appearance under transmitted light. Basic organic component Common organic pigment, few fresh plant tissue and very few slightly to moderately decomposed plant tissue residues. Groundmass The c/f distribution pattern is open porphyric, the b-fabric of the micromass is stipple speckled b-fabric. Pedofeature Amorphous pedofeature: the reddish brown to dark brown iron oxide impregnative nodules, (sized 0.6-4.5 mm), strongly impregnated, some nodules show concentric and typic structure with sharp boundaries, present about 5% of the thin section area.

Btg1	11-32	Microstructure Dominant channels structure mixed with weakly developed subangular blocky structure; voids are mainly channels (50-600 μm width), few vughs, planar voids (10-30 μm width) and vesicles (100-200 μm width); total porosity about 20% of the thin section area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 10:90. Coarse fraction: Similar to above horizon but tourmaline could not be to observe. Fine fraction: Pale brown to yellowish brown, clay to fine silt sized material, dotted and speckled appearance under transmitted light. Basic organic component Common organic pigment, few slightly to highly decomposed plant tissue residues. Groundmass: As that found in Apg horizon. Pedofeature Textural pedofeature: The pale yellow clay coatings and infillings cover about 2-4% of the thin section area. Amorphous pedofeature: the reddish brown to dark brown iron oxide impregnative nodules (sized 0.8-2.5 mm), strongly impregnated, some nodules show concentric structure with sharp boundaries, present about 5% of the thin section area.
Btng1	56-65/85	Similar to the above horizon, the c/f ratio is about 20:80, the b-fabric of the micromass is porostriated b-fabric and few gronostriated. The amorphous iron oxide impregnative and concentric nodules increasing from the above horizon to cover about 15-20% of the thin section area.
Btng2	85-110	Similar to the above horizon, the fine fraction is grayish brown to pale brown clay. The crystalline pedofeature show prismatic gypsum cluster about 1%. The amorphous iron oxide impregnative and concentric nodules decreasing from the above horizon to present about 1% of the thin section area.
2Btng4	124-152	Similar to the above horizon, the c/f ratio is about 10:90, the fine fraction, yellowish brown to pale brown clay. The textural pedofeature is decrease from the upper horizon, and present about 2%. The amorphous pedofeatures are reddish brown to black manganiferous and iron oxide impregnative nodules (sized 0.8-5 mm), weakly to strongly impregnated, sharp to diffuse boundaries, present about 15%. The fabric pedofeature shows pressure surface or slickenside occur on the wall of the planar voids present about 2 % of the thin section area.

Pedon 9

Horizon	Depth (cm)	Description
Apg1	0-10	Microstructure Channels structure some part of area show vugh structure; voids mainly are channels (100-540 μm width) and vughs; total porosity about 30% of the thin section area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 40:60. Coarse fraction: The mineral grains mostly are quartz grains, range from silt to medium sand size (25-500 μm), mainly are very fine sand size and few medium sand size, subangular to subrounded; few runi-quartz, rare zircon and tourmaline; moderately sorted. Fine fraction: brown to pale brown, clay to fine silt sized material, dotted and speckled appearance under transmitted light. Basic organic component Common organic pigment, few fresh plant tissue and few slightly to highly decomposed plant tissue residues. Groundmass The c/f distribution pattern is open to close porphyric, the b-fabric of the micromass is porostriated b-fabric and stipple speckled b-fabric. Pedofeature Amorphous pedofeature: the reddish brown to dark brown iron oxide impregnative nodules (sized 0.5-3 mm), strongly impregnated, and iron oxide concentric nodules (sized 1.5-4 mm), some nodules show typic structure with sharp boundaries, present about 5% of the thin section area.
Btg1	22-38	Similar to the above horizon, but show moderately developed subangular blocky structure; voids mainly are channels (50-600 μm width), inter connected vughs, and planar voids (10-40 μm width); total porosity about 25%. The fine fraction is brown to yellowish brown clay. The c/f distribution pattern is open porphyric, the b-fabric of the micromass is porostriated b-fabric and few stipple speckled b-fabric. The textural pedofeature is pale yellow clay coatings and infillings, some time show microlaminated cover about 2-4%. The amorphous yellowish brown to strong brown clay mixed with iron oxide mottles coated on some voids, and iron oxide impregnative and concentric nodules decrease from the above horizon to cover about 2% of the thin section area.
Btg2	38-60	Similar to the above horizon, the c/f ratio is about 20:80. The textural pedofeature is pale yellow clay coatings and infillings about 2%. The amorphous iron oxide impregnative and concentric nodules decreasing from the above horizon to cover about 1-2% of the thin section area.
Btg4	83-102	Similar to the above horizon, the c/f ratio is about 25:75. the fine fraction is pale brown to yellowish brown clay. The crystalline pedofeature show halite coating on the wall of voids about 1%. The amorphous pedofeature consist of dark brown to black (oblique) manganiferous and iron oxide impregnative nodules (sized 0.6-4.0 mm), moderately to strongly impregnated, sharp boundaries, various shape, present about 15% of the thin section area.

2Btg5	102-121	Similar to the above horizon, the c/f ratio is about 30:70. The crystalline pedofeature shows halite coating on the wall of voids about 2% and prismatic gypsum cluster about 1%. The amorphous pedofeatures are manganiferous and iron oxide impregnative nodules decreasing from the above horizon to cover about 5% of the thin section area.
2Btg7	140-162	Similar to the above horizon, the c/f ratio is about 50:50. The textural pedofeature is pale yellowish brown illuviated clay, thin to thick hypo-coatings and infillings, some show laminated clay (sized 200 μm). The crystalline pedofeature shows halite coating on the wall of voids about 1%. The amorphous iron oxide impregnative nodules decreasing from the above horizon to cover about 2-4% of the thin section area.

Pedon 10

Horizon	Depth (cm)	Description
Apg	0-10	Microstructure Dominant granular structure mixed with subangular blocky structure; voids are compound packing voids, channels (50-400 μm width), vughs and planar voids (10-40 μm width); total porosity about 40% of the thin section area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 40:60. Coarse fraction: The mineral grains mostly are quartz grains, range from silt to medium sand size (25-500 μm), mainly are very fine sand size and few medium sand size, subangular to subrounded; few runi-quartz, rare zircon and tourmaline; moderately sorted. Fine fraction: brown to pale brown, clay to fine silt sized material, dotted and speckled appearance under transmitted light. Basic organic component Common organic pigment, few fresh plant tissue and few slightly to highly decomposed plant tissue residues. Groundmass The c/f distribution pattern is open porphyric, the b-fabric of the micromass is porostriated b-fabric and stipple speckled b-fabric. Pedofeature Amorphous pedofeature: the reddish brown to dark brown iron oxide impregnative nodules (sized 1.2-3 mm), strongly impregnated, some nodules concentric structure with sharp boundaries, present about 5% of the thin section area.
Btg2	31-52	Similar to the above horizon, but show subangular blocky structure and channels structure; total porosity about 25% of the thin section area. The c/f ratio is about 20:80. The textural pedofeature is pale yellow clay coatings and infillings, sometimes show microlaminated about 2%. The amorphous iron oxide impregnative, weakly to strongly impregnated, some nodules show typic structure with sharp boundaries, present about 5% of the thin section area.
Btg4	69-95	Similar to the above horizon, but show channels structure and moderately developed subangular blocky structure, porostriated b-fabric; total porosity about 20% of the thin section area. The c/f ratio is about 10:90. The textural

		pedofeature is much more increase from the upper horizon about 2-4%. The amorphous iron oxide impregnative, weakly to strongly impregnated, sharp to diffuse boundaries, present about 5% of the thin section area.
2Btng1	95-128	Similar to the above horizon, but show weakly and moderately developed subangular blocky structure, stipple speckled and porostriated b-fabric, the c/f ratio is about 15:85. The fine fraction, grayish brown to yellowish brown clay. The amorphous of iron oxide impregnative nodules (sized 0.5-1.5 mm), weakly impregnated, some nodules show concentric structure, sharp boundaries, various shape, present about 5% of the thin section area.
2Btng3	161-187	Similar to the above horizon, but the textural pedofeature is pale yellowish brown illuviated clay, thin to thick coatings, limpid aspect and strongly oriented. The amorphous consist of manganiferous impregnative nodules, weakly to strongly impregnated, and few aggregate nodules, sharp to diffuse boundaries, various size and shape cover about 10% of the thin section area.

Location 3 Sandy over clayey textures salt affected soils (Ki)

Pedon 11

Horizon	Depth (cm)	Description
Apg	0-15/23	Microstructure Dominant vughy structure and few vesicular structure; void mainly are vughs and few vesicles; total porosity about 30% of total area. Basic mineral components The c/f ratio limit at 10 μm, ratio of 80:20. Coarse fraction: Dominant single quartz grains, mostly are in 100-300 μm size range, subangular and subrounded; few runi-quartz, very few tourmaline and zircon; moderately sorted. Fine fraction: Brownish gray (under transmitted light), very fine silt to clay sized material dotted appearance and usually mixed with organic pigment. Basic organic component Generally are organic pigment, few highly decomposed plant tissue residues. Groundmass The c/f distribution pattern is sand monic grading to chitonic, the b-fabric of the micromass is undifferentiated b-fabric. Pedofeature Amorphous pedofeature: The ferruginous impregnative nodules with sharp boundaries, sized about 3000 – 5000 μm, present about 10% of total area.
Bcg	23-46	Microstructure Common fissure structure and few channels structure; voids mainly are planar voids and few channels; total porosity is about 25-30%. Basic mineral component Similar to the Apg horizon but the c/f limit ratio at 10 μm = 60:40 and the amount of clay increases. Basic organic component Generally are organic pigment staining to the micromass, very few highly decomposed plant tissue residues. Groundmass The c/f distribution pattern is open porphyric, the b-fabric of the micromass is stipple speckled b-fabric, very few porostriated b-fabric. Pedofeature Textural pedofeature: Yellow to yellowish brown clay mixed with iron oxide coatings present on the wall of voids, thickness about 20-50 μm, cover 2% of total area. Amorphous pedofeature: Few concentric ferruginous nodules with sharp boundaries (400–2500 μm), present about 5% of area.
Btg2	65-88	The microstructure is dominantly crack structure and few vughy structure; voids mainly are planar voids and few vughs; total porosity is about 20% of total area; the light yellow to yellowish brown fine materials increase, the c/f ratio is 60:40. The textural clay, weakly to moderately oriented is slightly increase to cover 2-4% of the area. The amorphous pedofeatures are very few iron oxide

		impregnative nodules, frequent yellowish brown to strong brown clay mixed with iron oxide mottles various sizes and shapes, cover 10% of the area of the thin section.
2Btng1	113-140	The microstructure is dominantly vughy structure and frequent vesicular structure; voids mainly are vughs and vesicles; total porosity is about 20% of total area; the c/f limit at 10 μm ratio = 40:60; the related distribution pattern is close porphyric and the b-fabric of the micromass mainly is stipple speckled and porostriated b-fabric; the textural pedofeatures are yellow to yellowish brown and very few reddish brown clay mixed with iron oxide coatings present on the wall of voids and some infillings, thickness about 20-100 μm, cover 10-15% of the area of the thin section, the amorphous pedofeatures are the iron oxide impregnated s-matrix increased to cover about 15-20%.
2Btng3	170-205+	Similar to 2Btng1 horizon but total porosity decreases to present about 5% of total area; the fine fraction is slightly increase, particularly in very fine silt size, the c/f ratio is aprox 35:65.

Horizon	**Depth (cm)**	**Description**
Apg	0-19/20	Microstructure Dominant compact grain structure; voids mainly are vughs and few channels, total porosity is about 20% of total area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 85:15. Coarse fraction: Dominant single quartz grains, mostly are in 100-250 μm, subangular to subrounded; few runi-quartz, very few tourmaline and zircon; moderately sorted. Fine fraction: Gray to grayish brown, fine silt sized material (under transmitted light), usually show dotted appearance due to mixed with organic fine materials. Basic organic component Mainly are organic pigment and punctuation, few highly decomposed plant tissue residues. Groundmass The c/f related distribution is sand monic grading to chitonic, the b-fabric of the micromass is stipple speckled to undifferentiated b-fabric. Pedofeature Amorphous pedofeature: Very few iron oxides concentric-nucleic nodules (2000 μm) with sharp boundaries, present about 2% of total area.
Bcg	32-54/63	Similar to Apg horizon but voids mainly are vughs and frequent vesicles; total porosity decreases to present about 10-15% of total area; the c/f ratio is 70:30; the c/f related distribution is open to close porphyric, the b-fabric of the micromass is stipple speckled b-fabric; the amorphous pedofeatures are common iron oxide concentric nodules (1000-8000 μm) with sharp boundaries covering 35% of the area of the slide and manganiferous impregnative nodules present about 15% of the area of the thin section.
Btg2	87-111/114	The fine fraction increases, the c/f ratio is 60:40; the c/f related distribution pattern is open to close porphyric; the textural pedofeature is yellow to yellowish brown clay mixed with iron oxide coatings present on the wall of

		voids, thickness about 10-30 μm, cover 5% of total area, the amorphous pedofeatures are few iron oxide impregnated s-matrix and few yellowish brown to strong brown clay mixed with iron oxide mottles various sizes and shapes, present about 10-15%.
2Btg3	114-137	Microstructure Very dominant vughy structure; voids mainly are vughs; total porosity is about 10-15% of total area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 50:50. Coarse fraction: Similar to that of Btng2 horizon but decrease in size and amount, mostly are in size 20-100 μm, moderately sorted. Fine fraction: Yellowish brown to brown clay (under transmitted light), usually have dotted appearance. Basic organic component Present as organic pigment and punctuation. Groundmass The c/f related distribution is close porphyric, the b-fabric of the micromass is stipple speckled b-fabric. Pedofeature Textural pedofeature: The yellow to yellowish brown clay mixed with iron oxide coatings present on the wall of voids and some infillings, thickness about 10-50 μm, cover 8-10% of the area of the slide. Amorphous pedofeature: Frequent yellowish brown to strong brown iron oxides impregnated s-matrix various sizes and shapes, cover about 15-20%.
2Btng1	155-183	Similar to that 2Btg3 horizon but total porosity is about 5-10% of total area; the coarse fraction is slightly decrease, fine fraction is slightly increase, the c/f ratio is 40:60; the textural pedofeature is yellow to yellowish brown clay mixed with iron oxide coatings present on the wall of voids cover 20% of total slide.

Pedon 13

Horizon	Depth (cm)	Description
Apg1	0-18	Microstructure Single grain structure, locally is compact grain structure; Voids mainly are simple packing voids, vughs and few channels; total porosity is 25% of total area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 80:20. Coarse fraction: Quartz grains are dominant, mainly are in 100-300 μm size range and very few 500-1000 μm, angular to subrounded; few runi-quartz, very few tourmaline and zircon; poorly to moderately sorted. Fine fraction: Light brown to dark brown (under transmitted light), usually have dotted appearance. Basic organic component Generally are amorphous organic fine material and few highly decomposed plant tissue residues.

		Groundmass The c/f related distribution is chitonic, the b-fabric of the micromass is undifferentiated. Pedofeature Amorphous pedofeature: Few iron oxide nucleic nodules (2000-4000 μm) with sharp boundaries, present about 10% of total area.
Btg1	30-48	Microstruture Vughy structure, voids generally are vughs and vesicles; total porosity slightly decreases to cover about 20% of total area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 60:40. Coarse fraction: Similar to that Apg1 horizon but decreases in size and amount, mostly are in 100-150 μm size range, moderately sorted. Fine fraction: Yellowish brown to brown clay (under transmitted light), usually have dotted appearance due to mixed with organic fine material. Basic organic component Very few organic pigment staining to the micromass. Groundmass The c/f related distribution is open porphyric, the b-fabric of the micromass is stipple speckled b-fabric, few porostriated. Pedofeature Textural pedofeature: The yellow to yellowish brown clay and clay mixed with iron oxide hypo-coatings and coatings present on the wall of voids and on quartz grains, thickness about 20-50 μm, cover 5-7% of total area. Amorphous pedofeature: The nucleic nodules and iron oxide impregnative nodules (2000-7000 μm) with sharp boundaries, present about 10% of total area of the slide, and the iron oxide also present as coating on grains, occupy about 10% of the total area.
Btg2	48-73	Similar to Btg1 horizon but total porosity slightly decrease to about 10-15% of total area, the textural pedofeature is yellowish brown clay mixed with iron oxide coatings present on the wall of voids, thickness about 20-70 μm, cover 5% of total area, the amorphous pedofeature is few iron oxide impregnated nodules, present about 5% and the iron oxide coating on grains are decrease to cover about 3-5%.
2Btg4	99-188	Microstructure Dominant vughy structure and very few channels structure; voids mainly are vughs and very few channels; total porosity is about 15% of total area. Basic mineral components The c/f ratio limit at 10 μm, ratio of 60:40. Coarse fraction: The mineral grains mostly are single quartz grains, 50-200 μm size range. Fine fraction: Yellowish brown and brown to dark brown clay (under transmitted light), dotted appearance due to mixed with organic fine materials. Groundmass The c/f related distribution is close porphyric, the b-fabric of the micromass is usually stipple speckled b-fabric, frequent porostriated.

		Pedofeature Textural pedofeature: Yellowish brown, clay mixed with iron oxide coatings present on the wall of voids, on quartz grains and some infillings, thickness about 20-100 μm, cover about 10% of the area of the thin section. Amorphous pedofeature: The yellowish brown to brown iron oxides locally impregnated s-matrix, present about 20% of total area.
2Btg6	150-185	The fine fraction is slightly increase; the c/f ratio is 50:50; the textural pedofeature is yellowish brown and brown to dark brown clay mixed with iron oxide coatings present on the wall of voids and some infillings, thickness about 20-200 μm, cover 20% of total area. The yellow to yellowish brown iron oxide locally impregnated s-matrix occupy about 30% of total area.

Pedon 14

Horizon	Depth (cm)	Description
Apg	0-28	Microstructure Very dominant vughy structure; voids mainly are vughs; total porosity is about 20% of total area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 90:10. Coarse fraction: Dominant single quartz grains, mostly are in 50-300 μm, subangular to subrounded; few runi-quartz, very few tourmaline and zircon; moderately sorted. Fine fraction: Grayish brown grading to dark brown (under transmitted light), dotted appearance due to mixed with organic fine materials. Basic organic component Mainly are amorphous organic fine material, frequent highly decomposed plant tissue residues. Groundmass The c/f related distribution pattern is nearly sand monic, the b-fabric of the micromass is undifferentiated b-fabric. (due to organic components) Pedofeature Amorphous pedofeature: Very few typic nodules (2000-5000 μm) with sharp boundaries, present about 2% of the area of the slide.
Bng	28-44	Similar to Apg horizon but total porosity decreases to present about 10% of total area; the textural pedofeature is yellowish brown clay mixed with iron oxide coatings present on the wall of voids, thickness 10-20 μm, cover 2% of total area, the amorphous pedofeature is very few typic nodules (1000-3000 μm), present about 2% of the area of the slide.
Bcg	44-66	Microstructure Fissure structure; voids mainly are planar voids, few vughs; total porosity is about 10% of total area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 70:30. Coarse fraction: Similar to that of Apg horizon but the amount decreases. Fine fraction: Yellowish brown to brown, clay to fine silt sized materials (under transmitted light), dotted appearance. Groundmass The c/f related distribution is open porphyric, the b-fabric of the micromass is stipple speckled b-fabric, few porostriated.

		Pedofeature Textural pedofeature: Yellowish brown clay mixed with iron oxide coatings present on the wall of voids, on quartz grains and some infillings, thickness about 20-50 μm, cover 5% of the area of the slide. Amorphous pedofeature: The iron oxide concentric nodules (3000-5000 μm) with sharp boundaries, present about 30% of the area of the slide and the iron oxide impregnated s-matrix with the boundaries diffuse to the groundmass various sizes and shapes, occupy about 10%. Fabric pedofeature: The pressure surface, present about 2%.
Btng1	66-85	Similar to Bcg horizon but the fine fraction is slightly increase; the c/f ratio is 60:40; The amorphous pedofeatures are frequent typic nodules (2000-4000 μm), present about 20% of total area and frequent iron oxide impregnative nodules, various size with sharp to diffuse boundaries.
Btng2	85-110	Similar to Btng1 horizon but the fine material is slightly increase; the c/f ratio is 50:50; the c/f related distribution pattern is close porphyric; the amorphous pedofeature is slightly decrease to occupy about 5-10% and generally are the iron oxide impregnated s-matrix (weakly to moderately impregnated).
2Btng4	137-161	Microstructure Very dominant vughy structure; voids mainly are vughs; total porosity is about 10% of total area. Basic mineral components The c/f ratio limit at 10 μm, ratio of 60:40. Coarse fraction: Similar to the Apg horizon. Fine fraction: Yellow, yellowish brown to brown clay (under transmitted light), usually with dotted appearance. Basic organic components Very few the organic pigment staining to the micromass. Groundmass The c/f related distribution pattern is close porphyric, the b-fabric of the micromass is stipple speckled b-fabric. Pedofeature Textural pedofeature: The yellowish brown to brown clay and clay mixed with iron oxides coatings present on the wall of voids, on quartz grains and some infillings, thickness about 20-200 μm, cover 15% of total area. Amorphous pedofeature: None present.
2Btg	183-206+	Similar to 2Btng4 horizon but the soil material generally are impregnated with ferruginous material, weakly to strongly impregnated and give yellow grading to dark brown. The textural clay decrease to present about 2-4% of the total area.

Pedon 15

Horizon	Depth (cm)	Description
Apg	0-15	Microstructure Very dominant vughy structure; voids mainly are vughs; total porosity is about 30% of total area. Basic mineral component The c/f ratio limit at 10 μm, ratio of 80:20. Coarse fraction: Quartz grains are dominant, mostly are in 100-300 μm size range, subangular to subrounded; few runi-quartz, very few tourmaline and zircon; moderately sorted. Fine fraction: Grayish brown to dark brown clay to fine silt sized material (under transmitted light), usually has dotted appearance due to contain organic fine material. Basic organic component Generally are organic pigment and punctuation, few moderately to highly decomposed plant tissue residues. Groundmass The c/f distribution pattern is chitonic, the b-fabric of the micromass is undifferentiated b-fabric. Pedofeature Amorphous pedofeature: Few iron oxide concentric nodules (8000 μm) with sharp boundaries, present about 10% of total area.
Bcg	15-50	Microstructure Dominant channels structure; voids mainly are channels and few vughs; total porosity is about 25-30% of total area. Basic mineral components The c/f ratio limit at 10 μm, ratio of 70:30. Coarse fraction: Similar to Apg horizon but the amout is slightly decreases. Fine fraction: Yellowish brown to brown, clay to fine silt sized material (under transmitted light), usually has dotted appearance due to contain organic fine materials. Basic organic component Very few organic pigment and punctuation. Groundmass The c/f distribution pattern is close porphyric, the b-fabric of the micromass is stipple speckled b-fabric. Pedofeature Amorphous pedofeature: The iron oxide concentric nodules (5000 μm) and the impregnative nodules, various size with sharp boundaries, occupy about 5% of the area.
Btg2	70-90	Similar to Bcg horizon but the fine fraction is increase; the c/f ratio is 60:40; the textural pedofeature is yellowish brown clay mixed with organic pigment coatings present on the wall of voids, thickness about 20-50 μm, cover 5% of total area, the amorphous pedofeatures are iron oxide locally impregnated s-matrix, various size and shape, sharp to diffuse boundaries, cover about 10% of the area.

2Btg4	110-130	Similar to Btg2 horizon but the coarse fraction is slightly decrease in amount and sizes, mostly are in 50-200 μm; the c/f ratio is 50:50; the textural pedofeature is yellowish brown and reddish brown clay and clay mixed with iron oxide coatings present on the wall of voids and some present as infillings, thickness about 50-150 μm, cover 10% of total area, the amorphous pedofeature present as iron oxide coatings or bridging the mineral grains, the boundaries diffuse to the s-matrix and cover about 5%.
2Btg5	153-182	Similar to 2Btg4 horizon but the textural pedofeatures are increase to cover about 15-20% and present as clay mixed with iron oxide laminated coatings and the amorphous pedofeature increase to cover 20-25% of the area of the thin section.

Pedon 16

Horizon	Depth (cm)	Description
Apg1	0-16/18	Microstructure Single grain structure grading to compact grain structure; voids mainly are simple packing voids and few vughs; total porosity is about 30% of total area. Basic mineral components The c/f ratio limit at 10 μm, ratio of 90:10. Coarse fraction: Quartz grains are dominant, mostly are in 50-300 μm size range, subangular to subrounded; few runi-quartz and very few tourmaline and zircon; moderately sorted. Fine fraction: Brown to dark brown (under transmitted light), generally are amorphous organic fine materials. Basic organic component Generally are organic pigment and punctuation, frequent highly decomposed plant tissue residues. Groundmass The c/f distribution pattern is chitonic, the b-fabric of the micromass is undifferentiated b-fabric. Pedofeature None present.
Bcng	28-47/57	Clay increase; the c/f ratio is 70:30; the c/f related distribution pattern is open porphyric, the b-fabric of the micromass is stipple speckled b-fabric; the amorphous pedofeature is dominant nucleic, concentric and typic nodules (1500-10000 μm) with sharp boundaries, present about 60% of total area.
Btng1	57-72	Microstructure Dominant vughy structure and few channels structure; voids mainly are vughs and few channels; total porosity is about 20% of total area. Basic mineral components The c/f ratio limit at 10 μm, ratio of 70:30. Coarse fraction: Similar to that of Apg1 horizon but slightly decreases in amount and sizes, mostly are in 50-150 μm size range. Fine fraction: Yellowish brown to brown, clay sized material (under transmitted light), dotted appearance due to mixed with organic fine materials. Groundmass The c/f distribution pattern is open porphyric, the b-fabric of the micromass is stipple speckled b-fabric, few granostriated.

		Pedofeature Textural pedofeature: The yellow to yellowish brown clay coatings present on the wall of voids, thickness about 10-30 μm, cover 1-2% of the area of the slide.
Btng3	94-113	Similar to that of Btng1 horizon but the coarse fraction is slightly decrease, the c/f ratio is 60:40; the c/f related distribution is close porphyric; the textural pedofeature is yellowish brown to brown clay coatings present on the wall of voids, some infillings, thickness about 20-100 μm, cover 5% of total area, the amorphous pedofeature is few iron oxide locally impregnated s-matrix, sharp to diffuse boundaries, present about 10% of the area of the slide.
2Btng4	113-138	Similar to Btng3 horizon but the fine material increase; the c/f limit at 10 μm ratio = 50:50; the coarse fraction mostly are in 50-150 μm size range; the textural pedofeature is slightly increase to cover about 7% but amorphous pedofeature decrease to cover about 5%.
2Btng5	169-202+	Similar to 2Btng4 horizon but the textural pedofeatures present as clay mixed with iron oxide coatings, yellowish brown to dark brown, present on the wall of voids and occupy about 7-10% of the area of the thin section.

Location 4 Clayey textured salt affected soils (Ud)

Pedon 17

Horizon	Depth (cm)	Description
Ang	0-20	Microstructure Moderately to strongly developed angular blocky structure, various sized peds, voids are mainly accommodate planar voids (50-100 μm width), estimated total pore space is 5%. Basic mineral component The c/f ratio limit at 10 μm, ratio of 7:93. Coarse fraction: The mineral grains mostly are quartz grains, coarse sand to silt size, angular to rounded; poorly sorted. Fine fraction: Yellowish brown, clay to fine silt sized material, dotted and speckled appearance under transmitted light. Basic organic component Generally they are punctuation and the organic pigment staining to micromass, few plant root tissues, weakly to moderately decomposed remaining in voids. Groundmass The c/f related distribution pattern is open porphyric, the b-fabric of the micromass is stipple speckled, locally showing parallel striated b-fabric. Pedofeature Crystalline pedofeature: About 10% of the area shows impurity crypto-crystalline halite coating on the wall of voids. Amorphous pedofeature: Reddish brown to dark brown iron oxide typic nodules (sized 0.1-0.2 mm) with rounded boundaries of about 2%.
ABng	20-36	Similar to the above horizon, microstructure is similar to that of the Ag horizon, but with weakly to moderately angular blocky structure, the c/f ratio is about 10:90, the coarse fraction is rare halite, the fine fraction is pale brown clay to fine silt sized material, very few plant root tissues moderately decomposed remaining in voids, the textural pedofeature is yellowish brown clay coating on the wall of voids, yellowish brown clay hypo-coating and quasi-coating peds of about 5% of the area.
Btng1	36-60	Similar to the above horizon, but some voids show few vughs, estimated total pore space of 10%, the c/f ratio is about 15:85, the c/f related distribution pattern is close to open porphyric, the b-fabric of the micromass is few porostriated and granostriated, the textural pedofeature is pale yellowish brown clay coating of voids of about 5%.
Btng3	85-110	Similar to the above horizon, the c/f ratio is about 30:70, the textural pedofeature is pale yellowish brown clay coating of voids and quasi-coating in voids and peds of about 5%.
Bssg1	130-165	Similar to the above horizon, the fabric pedofeature shows pressure surfaces or slickensides occurring on the wall of the planar voids of about 2%.

Pedon 18

Horizon	Depth (cm)	Description
Ang	0-19	Microstructure Moderately to strongly developed angular blocky structure, various sized peds, voids are mainly partially accommodated planar voids (50-200 μm width), estimated total pore space is about 5%. Basic mineral component The c/f ratio limit at 10 μm, ratio of 30:70. Coarse fraction: The mineral grains mostly are quartz grains, coarse sand to silt size, angular to rounded; poorly sorted. Fine fraction: Yellowish brown, clay to fine silt sized material, dotted and speckled appearance under transmitted light. Basic organic component Few organic pigment staining to micromass, few plant root tissues, moderately decomposed remaining in voids. Groundmass The c/f related distribution pattern is open porphyric, the b-fabric of the micromass is stipple speckled b-fabric. Pedofeature Crystalline pedofeature: about 10% of the area shows impurity crypto-crystalline halite coating on the wall of voids. Amorphous pedofeature: About 2% is the reddish brown to dark brown iron oxide typic nodules (sized 0.5-2 mm), with round boundaries. Textural pedofeature: Yellowish brown clay quasi-coating in peds of about 2%.
Btng1	19-43	Similar to the above horizon, but microstructure is moderately to strongly developed subangular blocky mixed with weak angular blocky structure, various sized peds, void are mainly partially accommodated planar voids (sized 50-150 μm width) and channels voids (sized 100-250 μm width), estimated total pore space about 5 %, the c/f ratio is about 30:70, few plant root tissues, weakly decomposed remaining in voids, the textural pedofeature is pale brown clay coating on the wall of voids and infilling in grains of about 2%.
Btng3	64-94	Similar to the above horizon, but microstructure is strong angular blocky structure, various sized peds, voids are planar voids (50-200 μm width), the coarse fraction shows few runi-quartz, the amorphous pedofeature is dark reddish brown iron oxide typic nodules (sized 1-2 mm) with rounded boundaries of about 2%, the textural pedofeature is yellowish brown clay coating on the wall of voids and quasi-coating in voids and peds of about 5%.
Btng4	94-113	Similar to the above horizon, the c/f ratio is about 30:70, the textural pedofeature is yellowish brown clay infilling and coating of grain of about 5% of the area, the amorphous pedofeature is reddish brown to dark brown iron oxide aggregated segregation of about 2%.
2Btg	140-169	Similar to the above horizon, the c/f ratio is about 50:50, the fine fraction is pale brown clay to fine silt sized material, the amorphous pedofeature is dark brown iron oxide halo nodules (sized 500 μm) with rounded boundaries of about 2%, the textural pedofeature is yellowish brown clay hypo-coating and quasi-coating on the wall of voids grains and peds of about 5%.

Pedon 19

Horizon	Depth (cm)	Description
Ang	0-19	Microstructure Moderately to weakly developed subangular blocky mixed with moderately to weakly developed angular blocky structure, various sized peds, voids are mainly accommodated planar voids (20-100 μm width) few vughs and channels, estimated total pore space is about 5%. Basic mineral component The c/f ratio limit at 10 μm, ratio of 30:70. Coarse fraction: The mineral grains mostly are single quartz grains, coarse sand to silt size, angular to rounded; poorly sorted. Fine fraction: Pale brown, clay to fine silt sized material, dotted and speckled appearance under transmitted light. Basic organic component Generally are punctuation and the organic pigment staining to micromass, few plant root tissues, weakly to moderately decomposed remaining in voids. Groundmass The c/f related distribution pattern is open porphyric, the b-fabric of the micromass is stipple speckled b-fabric. Pedofeature Crystalline pedofeature: About 10% of the area shows impurity crypto-crystalline halite coating on the wall of voids. Amorphous pedofeature: About 2% of the reddish brown to dark brown iron oxide typic nodules (sized 1-2 mm), with rounded boundaries. Textural pedofeature: Yellowish brown clay quasi-coating in peds of about 2%.
Btng1	19-38	Similar to the above horizon, coarse fraction shows few runi-quartz, the b-fabric of the micromass is stipple speckled to undifferentiated, the amorphous pedofeature is reddish brown to dark brown iron oxide typic nodules (sized 1-2 mm) with rounded boundaries of about 2%, the textural pedofeature is yellowish brown clay infilling and coating of voids and peds present about 5%.
2Btng4	77-100	Similar to the above horizon, the c/f ratio is about 50:50, the c/f related distribution pattern is open to close porphyric, the b-fabric of the micromass is stipple speckled b-fabric, the textural pedofeature is yellowish brown clay coating of grain and the wall of voids of about 5%, the amorphous pedofeature is reddish brown to dark brown iron oxide typic nodules (sized 1-2 mm) with rounded boundaries of about 2%, the crystalline pedofeature of about 5% of the area shows carbonate.

2Btng6	119-146	Microstructure Mixture of single grain and moderately to weakly angular blocky structure, voids are mainly vughs (100-500 μm width), estimated total pore space is about 10%. Basic mineral component The c/f ratio limit at 10 μm, ratio of 80:20. Coarse fraction: The mineral grains mostly are single quartz grains, few runi-quartz, coarse sand to silt size, angular to rounded; well sorted. Fine fraction: Pale brown, clay to fine silt sized material. Basic organic component None present. Groundmass The c/f related distribution pattern is gefuric and closed porphyric, the b-fabric of the micromass is stipple speckled b-fabric. Pedofeature Textural pedofeature: Yellowish brown clay coating on the wall of voids and coating around grains of about 2%.
2Btng7	146-175	Similar to the above horizon, the c/f limit at 10 μm, ratio of 85:15.

Pedon 20

Horizon	Depth (cm)	Description
Ang	0-20	Microstructure Moderately to strongly developed angular blocky structure; various sized peds, voids are mainly accommodated planar voids (10-100 μm width) mixed with channels voids (100-200 μm width) and few vughs, estimated total pore space is about 5%. Basic mineral component The c/f ratio limit at 10 μm, ratio of 10:90. Coarse fraction: The mineral grains mostly are single quartz grains, few runi-quartz, rare halite, coarse sand to silt size, angular to rounded; poorly sorted. Fine fraction: Yellowish brown and pale brown, clay to fine silt sized material, dotted and speckled appearance under transmitted light. Basic organic component Generally they are punctuation and the organic pigment staining to micromass, few plant root tissues, weakly to moderately decomposed remaining in voids. Groundmass The c/f related distribution pattern is open porphyric, the b-fabric of the micromass is stipple speckled, porostriated and granostriated b-fabric. Pedofeature Crystalline pedofeature: About 10% of the area shows impurity crypto-crystalline halite coating on the wall of voids.

Btng1	20-44	Similar to the above horizon, the c/f limit at 10 μm, ratio of 10:90, voids are mixture of planar voids (10-120 μm width) and vughs (60-300 μm width) the fine fraction is pale brown clay, estimated total pore space is about 10%, the c/f related distribution pattern is close to open porphyric, the textural pedofeature is yellowish brown clay coating on the wall of voids and and around grains of about 5%.
Btng3	66-89	Similar to the above horizon, the b-fabric of micromass is stipple speckled, the textural pedofeature is yellowish brown clay coating on the wall of voids and around grains of about 2%, the amorphous pedofeature is reddish brown to dark brown iron oxide typic nodules (sized 1-2 mm) with rounded boundaries of about 2%,
Btng5	113-139	Similar to the above horizon, the fine fraction is light brownish gray clay, the textural pedofeature is yellowish brown clay coating and infilling on the wall of voids and around grains of about 5%, the amorphous pedofeature is reddish brown to dark brown iron oxide typic nodules (sized 1-2 mm) with rounded boundaries and shows aggregated segregation of about 2%.
Btng7	171-200+	Similar to the above horizon, coarse fraction infilling in fine fraction, the textural pedofeature is light yellowish brown clay coating on the wall of voids and infilling in peds of about 5%, the amorphous pedofeature is reddish brown to dark brown iron oxide aggregated segregation of about 2%.

Pedon 21

Horizon	Depth (cm)	Description
Ang	0-18	Microstructure Moderately to strongly developed angular blocky mixed with subangular blocky structure, various sized peds, voids are mainly accommodated to partially accommodated planar voids (10-200 μm width) with few vughs, estimated total pore space is about 5%. Basic mineral component The c/f ratio limit at 10 μm, ratio of 20:80. Coarse fraction: The mineral grains mostly are single quartz grains, coarse sand to silt size, angular to rounded; poorly sorted. Fine fraction: Yellowish brown and pale brown, clay to fine silt sized material, dotted and speckled appearance under transmitted light. Basic organic component Generally they are organic pigment staining to micromass, few plant root tissues, weakly to moderately decomposed remaining in voids. Groundmass The c/f related distribution pattern is open porphyric, the b-fabric of the micromass is stipple speckled b-fabric and few porostriated b-fabric. Pedofeature Crystalline pedofeature: About 10% of the area shows impurity crypto-crystalline halite coating on the wall of voids. Textural pedofeature: Yellowish brown clay quasi-coating on the wall of voids of about 2%.

Btng1	18-45	Similar to the above horizon, the fine fraction is pale brown, rare halite in coarse fraction, few weakly decomposed plant root tissues, the c/f related distribution pattern is open to close porphyric, the textural pedofeature is yellowish brown clay quasi coating of voids and coating on the wall of voids and around grains of about 10%.
Btng3	68-89	Similar to the above horizon, the c/f ratio limit at 10 μm, ratio of 10:90, the fine fraction is light brownish gray, the c/f related distribution pattern is open porphyric, the textural pedofeature is yellowish brown clay coating on the wall of voids and around grains with clay hypo-coating and clay quasi-coating in peds and voids of about 10%, the amorphous pedofeature is reddish brown to dark brown iron oxide aggregated segregation of about 2%.
Btng5	112-137	Similar to the above horizon, few plant root tissues, moderately to weakly decomposed, few runi-quartz in coarse fraction, the amorphous pedofeature is reddish brown to dark brown iron oxide typic nodules (sized 1-2 mm) with rounded boundaries of about 2%, the textural pedofeature is yellowish brown clay coating on the wall of voids with clay quasi-coating in peds and voids of about 5%.
Btng7	161-200+	Similar to the above horizon, the amorphous pedofeature is reddish brown to dark brown iron oxide typic nodules (sized 0.2-0.5 mm) with rounded boundaries of about 2%, the textural pedofeature is yellowish brown clay coating on the wall of voids with clay hypo-coating and clay quasi-coating in peds and voids of about 5%.

Pedon 22

Horizon	Depth (cm)	Description
Ang	0-21	Microstructure Weakly to moderately developed angular blocky structure, various sized peds, voids are mainly partially accommodated planar voids (20-100 μm width) with few vughs and few channels, estimated total pore space is about 5%. Basic mineral component The c/f ratio limit at 10 μm, ratio of 20:80. Coarse fraction: The mineral grains mostly are single quartz grains, few runi-quartz, coarse sand to silt size, angular to rounded; poorly sorted. Fine fraction: Yellowish brown and pale brown, clay to fine silt sized material, dotted and speckled appearance under transmitted light. Basic organic component Generally they are organic pigment staining to micromass, few plant root tissues, weakly to moderately decomposed remaining in voids. Groundmass The c/f related distribution pattern is open to close porphyric, the b-fabric of the micromass is stipple speckled b-fabric. Pedofeature Crystalline pedofeature: About 10% of the area shows impurity crypto-crystalline halite coating on the wall of voids. Amorphous pedofeature: About 2% of reddish brown to dark brown iron oxide typic nodules (sized 0.2-0.7 mm), with rounded boundaries.

		Textural pedofeature: Yellowish brown clay quasi-coating on the wall of voids present of 2%.
Btng1	21-41	Similar to the above horizon, the c/f ratio limit at 10 μm, ratio of 30:70, rare halite in coarse fraction, very few plant root tissues, weakly to moderately decomposed remaining in voids, the textural pedofeature is yellowish brown clay coating on the wall of voids with clay quasi-coating in peds and voids of about 5%.
Btng3	66-88	Similar to the above horizon, few plant root tissues, weakly decomposed remaining in voids, the amorphous pedofeature is reddish brown to dark brown iron oxide concentric nodules (sized 0.1-0.5 mm) and typic nodules (sized 0.1-0.2 mm) with rounded boundaries of about 2%, the textural pedofeature is yellowish brown clay coating and infilling on the wall of voids and peds with clay quasi-coating in peds and voids of about 5%.
Btng5	108-132	Similar to the above horizon, the c/f ratio limit at 10 μm, ratio of 10:90, very few plant root tissues, weakly decomposed remaining in voids, the amorphous pedofeature is reddish brown to dark brown iron oxide typic nodules (sized 0.1 mm) with rounded boundaries of about 2%, the textural pedofeature is yellowish brown clay coating on the wall of voids and peds with clay hypo-coating in peds and voids of about 5%.
Btng7	165-184	Similar to the above horizon, the textural pedofeature is yellowish brown clay coating on the wall of voids and grains of about 5%, the amorphous pedofeature is reddish brown to dark brown iron oxide aggregated segregation of about 2%.

Location 5 Sandy textured salt affected soils (Re-sa2)

Pedon 23

Horizon	Depth (cm)	Description
Apng	0-11	Microstructure Dominant compact grain structure and frequent pellicular grain structure; voids are mainly simple packing voids, few vesicles and vughs; total porosity is about 25%. Basic mineral component C/f ratio limit at 10 µm, ratio of 98:2. Coarse fraction: Quartz grains are dominant, mostly in 20-500 µm size range, with adominant size range of 50-200 µm, mostly subangular blocky, frequent halite and runi-quartz, very few zircon; moderately sorted. Fine fraction: Very few light yellow clay to fine silt size material dotted appearance and usually mixed with iron oxides. Basic organic component Rare fresh plant tissues on voids and large plant residues (1000-1800 µm) impregnated iron oxides, very few tissue residues, and frequent organic punctuations. Groundmass The c/f distribution pattern is nearly sand monic, few are gefuric and chitonic, the b-fabric of the micromass is undifferentiated. Pedofeature Crystalline pedofeature: Halite hypidiotopic, sizes 50-200 µm and present about 10% of total area. Amorphous pedofeature: Weak brown to strong brown iron oxide mottles, sized 20-100 µm, present about 10-15 % of total area. Textural pedofeature: Sandy pedofeature, about 2-3% of silt link capping.
Bng2	30-47	Microstructure Similar to the Apng horizon but very few vughs; total porosity is 20% of total area, c/f ratio is 95:5; rare metamorphic quartz. Basic organic component Few plant tissues present as amorphous materials. Pedofeature Textural pedofeature: Similar to the Apng horizon. Crystalline pedofeature: Halite xenotopic sizeds 50-100 µm and present about 10% of total area. Amorphous pedofeature: Similar to the Apng horizon but manganese oxide mottles, sizes 50-100 µm present about 1% of total area.
Btng1	47-69/76	Microstructure Complex structure composing dominantly of compact grain structure and bridge grain structure; voids are mainly simple packing voids and frequent vughs; total porosity is about 15-20% of total area. Basic mineral component The c/f ratio limit at 10 µm is 92:8. Coarse fraction: Same as the upper part of horizon but slightly decreasing in

		amount and size. Fine fraction: Similar to the upper part of horizon but the amount of silt and clay slightly increases. Basic organic component Generally are the organic punctuations and few plant tissue residues. Groundmass The related distribution pattern is mainly open porphyric; undifferentiated b-fabric.
Btng3	95-110	Microstructure: Similar to the upper part of horizon but with few planar and vesicular voids. Basic mineral component The c/f ratio limit at 10 μm is 90:10; c/f fraction as that found in Btng1 horizon. Groundmass The related distribution pattern is mainly close porphyric, undifferentiated b-fabric. Pedofeature Textural pedofeature: The light yellow thin clay coatings occur on quartz grains and on wall of voids covering less than 3%. Crystalline pedofeature: Same as the upper part of horizon. Amorphous pedofeature: The yellowish red and dark yellowish brown iron oxide mottles, sizes 50-100 μm, round, with sharp boundaries, covering about 5%; strong brown iron oxide nodules and coatings occur on quartz grains, present about 3% of total area.
Btng5	131-153	Similar to the Btng3 horizon but with few channels voids, coarse fraction slightly decreases in size and amount, fine fraction slightly increases, the b-fabric of micromass is mosaic-speckled, halite xenotopic coating occur on quartz grains and wall of voids, present about 7-8%, very few strong brown iron oxide nucleic-concentric nodules, sized 800-2000 μm and black manganese oxide mottles sizes 20-50 μm, present about 10-15% of total area.
2Btng6	153-178	Microstructure Dominant compact grain structure and frequent crack structure; voids are mainly packing voids, frequent vughs, few planar and channels voids; total porosity is about 15% of total area. Basic mineral component The c/f ratio limit at 10 μm is 85:15. Coarse fraction: Quartz grains are similar to that upper part of horizon but poorly sorted. Fine fraction: Brownish yellow and strong brown clay usually with dotted appearance mixed with iron oxides. Groundmass The c/f distribution pattern is close porphyric, the b-fabric of the micromass is undifferentiated and few dotted fine materials. Pedofeature Textural pedofeature: Few thin yellow to yellowish brown clay and clay mixed with iron oxides coatings on the wall of voids and quartz grains. Crystalline pedofeature: Halite xenotopic, sizes 20-100μm coating on the wall of voids, present about 5-6%.

		Amorphous pedofeature: Frequent strong brown iron oxide disjointed nodules, common yellowish brown to strong brown clay mixed with iron oxide mottles of variable sizes and shapes, black manganese oxide aggregated nodules, present about 3% of total area.
2Btng7	178-200+	Microstructure Complex structure composing dominantly of prismatic structure, subangular blocky structure and compact grain structure; voids are mainly planar voids, simple packing voids, frequent channels and vughs; total porosity is about 15% of total area. Basic mineral component The c/f ratio limit at 10 μm is 60:40. Coarse fraction: Same as the upper part of horizon but slightly decreasing in amount and size. Fine fraction: Similar to the upper part of horizon but amount of clay commonly increases. Groundmass The c/f related distribution is porphyric, the b-fabric of the micromass is stipple speckled to reticulate b-faric. Pedofeature The pedofeature is dominantly crystalline pedofeature and present as clay mixed with microcrystalline halite xenotopic, various sizes and shapes, occupying about 20% of total area. The amorphous pedofeature is compound ferruginous nodule, present about 10-15% of total area.

Pedon 24

Horizon	Depth (cm)	Description
Apng	0-12	Microstructure Dominant compact grain structure and few pellicular grain structure; voids are mainly simple packing voids, few vughs and chambers. Estimated total void space is 30-35% of total area. Basic mineral component The c/f ratio limit at 10 μm is 96:4. Coarse fraction: Dominantly single quartz grains in 50-200 μm sizes, subangular to subrounded; halite, sizes 50-200 μm, present about 15-20% of total area. Fine fraction: Yellowish brown, clay to fine silt size material with dotted and speckled appearance (due to organic fine materials and amorphous iron oxides) Basic organic component Common organic pigments, few moderately decomposed plant tissue residues. Groundmass The c/f related distribution is gefuric and few chitonic, the b-fabric of the micromass is undifferentiated. Pedofeature Textural pedofeature: Sandy pedofeature, about 4-5% of silt link capping. Crystalline pedofeature: Halite hypidiotopic, sizes 50-200 μm, occupying about 20% of total area. Amorphous pedofeature: Frequent ferruginous mottles, irregular in density and have diffuse boundaries.

Btng1	12-30	Similar to the Apng horizon but microstructure is very dominant compact grain structure; voids are mainly simple packing voids, very few vesicles and vughs; total porosity about 20-25% of total area. The fine material slightly increases and the c/f limit at 10 μm is 90:10. Halite xenotopic, variable sizes occupying about 20%. The brown to dark brown iron-manganese oxide nucleic-concentric nodules size 1200 μm, with sharp boundaries present about 1% of total area.
Btng3	53-73	Similar to the upper part of horizon but total porosity and coarse fraction are slightly decreasing in amounts and sizes. The pedofeature appears as microcrystalline halite mottles, various sizes and shapes. The amorphous pedofeature is iron oxide and manganese oxide irregular impregnative nodules, sizes 800-1000 μm and present about 2% of total area.
Btng5	100-128	Similar to the upper part of horizon but with few vughs, very few channels and planar voids; total porosity decreases, fine material slightly increases and the c/f limit at 10 μm is 84:16. The dark brown iron-manganese oxide impregnative nodules, sizes 1000-1500 μm increase to about 5-6%.
2Btng6	128-155	Microstructure Dominant compact grain structure; frequent crack structure; voids are mainly simple packing voids, frequent planar voids, few channels, very few vesicles; total porosity decreases; poorly sorted. Basic mineral component The c/f ratio is nearly the same as in the upper part of horizon. Coarse fraction: Quartz grains are mostly angular and poorly sorted. Fine fraction: Few light yellow clay mixed with few amorphous iron oxides. Groundmass The c/f distribution pattern is porphyric, the b-fabric of the micromass is undifferentiated to stipple-speckled b-fabric. Pedofeature Textural pedofeature: Few thin light yellow and yellowish brown clay and clay mixed with iron oxides coating on the wall of voids and on quartz grains. Crystalline pedofeature: Generally the material compound mixed with microcrystalline halite xenotopic, various sizes and shapes, present about 15- 20% of total area. Amorphous pedofeature: Few reddish brown iron oxide nucleic-concentric nodules, sizes, 1,000-2,000 μm, elongated, rounded, with smooth surface and sharp boundaries, present about 6%. Frequent ferruginous coatings and hypo-coatings of voids and grains.
2Crtng	155-200+	Microstructure Complex structure composing dominantly of crack structure and vugh structure, some parts are compact grain structure; rock structure is dominantly massive structure and some parts are laminar structures and with frequent fine cracks; voids are common planar voids and vughs, some parts are simple packing voids; total porosity is about 6% of total area. Basic mineral component The c/f ratio limit at 10 μm is 90:10. Coarse fraction: Quartz grains are dominant in 200-400 μm size range, frequent subangular and subrounded, few angular, some parts appear as halite xenotopic, sizes 50-60 μm, slightly poorly sorted. Fine fraction: Yellowish brown, strong brown and reddish brown clay, usually

		have speckled appearance mixed with amorphous iron oxides. Groundmass The related distribution pattern is dominantly porphyric, some parts are chitonic, the b-fabric of micromass is stipple-speckled to mosaic-speckled b-fabric. Pedofeature Dominant calcite crystals mainly and microcrystalline halite mixed with fine material infilled in the voids; few yellowish brown clay coatings on the wall of voids, quartz grains and rock structure.

Pedon 25

Horizon	**Depth (cm)**	**Description**
Apg	0-17/30	Microstructure Dominant compact grain structure, few pellicular grain structure and single grain structure; voids are mainly simple packing voids, frequent vughs, very few vesicles; total porosity is about 30-35% of total area. Basic mineral component The c/f ratio limit at 10 μm is 93:7. Coarse fraction: Quartz grains are dominant, mostly subangular to subrounded; moderately sorted. Fine fraction: Few fine silt size material, microcrystalline halite xenotopic, various sizes, present about 15% of total area. Basic organic component Rare fresh plant tissues on voids, few plant tissue residues. Groundmass The c/f distribution pattern is nearly sand monic and chitonic; the b-fabric of micromass is undifferentiated. Pedofeature About 10% of silt link capping, microcrystalline halite xenotopic, sizes 20-70 μm, occupying about 15% of total area, frequent yellowish brown iron oxide mottles, few ferruginous coatings and hypo-coatings of voids and grains.
Bg	17-30	Microstructure Complex structure composing dominantly of compact grain structure, pellicular grain structure and vesicular structure; voids are mainly vesicles and frequent simple packing voids, very few vughs, total porosity is about 20% of total area. Basic mineral component Similar to Apng horizon but c/f ratio is 90:10, coarse fractions are decreasing. Basic organic component Very few plant tissues present as amorphous materials. Pedofeature Similar to the Apg horizon, but with few dark brown to black iron oxide mixed with manganese oxide coatings on the wall of voids, iron oxide mottles are about 7% of total area.
Btng3	71-92	Microstructure Complex structure composing dominantly of prismatic structure, compact grain structure and crack structure; voids are planar voids, simple packing voids, few channels and vughs; total porosity is about 14% of total area.

		Basic mineral component
		The c/f ratio limit at 10 μm is 80:20.
		Coarse fraction: Similar to the Bg horizon but coarse fractions decrease in amount and size.
		Fine fraction: Same as the upper part of horizon but with common clay mixed with fine material present as amorphous iron oxides.
		Groundmass
		The c/f related distribution is porphyric, the b-fabric of the micromass is stipple-speckled.
		Pedofeature
		Textural pedofeature: Frequent thin light yellow to yellowish brown clay and clay mixed with amorphous iron oxide coatings on the wall of voids, quartz grains.
		Crystalline pedofeature: Microcrystalline halite xenotopic coatings on the wall of voids, quartz grains, present about 5-10% of total area.
		Amorphous pedofeature: The reddish brown to dark brown typical impregnative ferruginous nodules, sizes 1,000 μm, present about 2% of total area.
2BCrng1	92-120	Microstructure
		Complex structure composing dominantly of compact grain structure, some parts are fissure structure; rock structure is dominantly laminar structure and frequent fine cracks in rock structure; voids are common simple packing voids, few vughs; total porosity is about 10% of total area.
		Basic mineral component
		The c/f ratio limit at 10 μm is 90:10.
		Coarse fraction: Quartz grains are dominant in 20-200 μm size range, common subangular and subrounded, few angular, some parts are infilled in cracks of rock fragment; few runi-quartz, slightly poorly sorted.
		Fine fraction: Yellowish brown, strong brown and reddish brown clay, usually speckled appearance mixed with amorphous iron oxides.
		Groundmass
		The related distribution pattern is dominantly porphyric some parts are chitonic.
		Pedofeature
		Yellowish brown clay coatings on wall of voids and rock structure, few clay coatings on quartz grains; few microcrystalline halite mixed with fine materials infilled in the voids.
2BCrg	143-170	Microstructure
		Very dominant massive rock structure, voids are mainly fine to medium cracks of rock fragmentation; total porosity is about 5% of total area.
		Basic mineral component
		The c/f ratio limit at 10 μm is 95:5.
		Coarse fraction: Dominant quartz grains in silt size to very much finer sizes (20-100 μm), very few fine and medium sands, common subangular and subrounded, moderately sorted.
		Fine fraction: Frequent light yellow to yellowish brown clay, usually dotted and speckled; common reddish brown to dark red fine rock fractions mixed with iron oxides.

		Groundmass The related distribution pattern is dominantly porphyric, the b-fabric of micromass is usually dotted and speckled, some parts are reticulate striated. Pedofeature: Similar to the 2BCrng1 but with few yellowish brown clay coatings along thin beds of rock structure and cracks.

Pedon 26

Horizon	Depth (cm)	Description
Apg	0-12/14	Microstructure Dominant compact grain structure, some parts are pellicular grain structure and single grain structure; voids are mainly simple packing voids, very few vughs, total porosity is about 25% of total area. Basic mineral component The c/f ratio limit at 10 μm is 92:8. Coarse fraction: Quartz grains are dominant in fine to coarse (8-200 μm) sands, common subangular to subrounded; moderately sorted. Fine fraction: Few fine silt size materials; microcrystalline halite xenotopic, various sizes, present about 10-15% of total area. Basic organic component Rare fresh plant tissues on voids, few plant tissues residues and very few organic fine materials. Groundmass The c/f distribution pattern is nearly sand monic, some parts are gefuric and chitonic; the b-fabric of micromass is undifferentiated. Pedofeature: Sandy pedofeature; microcrystalline halite xenotopic coatings on the wall of voids and quartz grains; dark grayish brown and grayish brown mottles, present about 25-30% of total area.
Bng	14-31/46	Microstructure Dominant compact grain structure, some parts are pellicular grain structure; voids are mainly simple packing voids, few vesicles and channels, total porosity is about 20-25 % of total area. Basic organic component Generally the organic pigment, staining to the mineral material. Pedofeature Similar to the Apg horizon but iron oxide mottles decrease.
Btng2	53-73	Microstructure Very dominant compact grain structure, voids are simple packing voids, very few chambers and vughs; total porosity is 20% of total area. Basic mineral component Similar to the upper part of horizon but c/f ratio limit at 10 μm is 90:10, fine fractions present as clay mixed with amorphous iron oxides. Groundmass The c/f distribution pattern is gefuric and some parts are chitonic; the b-fabric of micromass is undifferentiated.

Pedofeature

Textural pedofeature: Yellowish brown clay mixed with amorphous iron oxides and impurity halite coatings on the wall of voids, quartz grains, present about 10% of total area.

Crystalline pedofeature: Impurity microcrystalline halite xenotopic coatings on the wall of voids and quartz grains decrease in amount and size.

Amorphous pedofeature: Very few reddish brown to strong brown iron oxide nucleic-concentric nodules, sizes 1,200-2,000 μm, rare reddish strong brown to dark brown iron-manganese oxide concentric nodules, rounded, smooth surface and sharp boundaries, size 1,000 μm, iron oxide typic nodules, irregular, rough surface and diffuse boundaries, size 1,400 μm, typic coating, compound clay mixed with amorphous iron oxides and impurity halite, size 700 μm, present about 1% of total area.

2Btng4 92-114

Microstructure

Very dominant compact grain structure; voids are mainly simple packing voids, few channels, total porosity is 15% of total area.

Basic mineral component

The c/f ratio limit at 10 μm is 85:15.

Coarse fraction: Quartz grains are dominant in medium to coarse sands (12-500 μm), common subangular, few angular; moderately sorted.

Fine fraction: Few fine silt size materials, light yellow to yellowish brown clay and clay mixed with amorphous iron oxides and microcrystalline halite present about 15% of total area.

Groundmass

The c/f distribution pattern is porphyric, the b-fabric of micromass is undifferentiated and very few dotted fine materials.

Pedofeature

Textural pedofeature: Few light yellow to yellowish brown clay and clay mixed with iron oxide coatings on wall of voids and quartz grains.

Crystalline pedofeature: Frequent impurity microcrystalline halite xenotopic of various sizes mixed with clay and iron oxide coatings on wall of voids and

quartz grains.

Amorphous pedofeature: Similar to the Btng2 but color of iron oxide is more

than weak yellow and increasing in amount.

2Btng6 137-164

Microstructure

Dominant compact grain structure, very few crack structures; voids are mainly simple packing voids, few fine planar voids and large channels (300-500 μm), very few vesicles (200-500 μm), total porosity is about 10% of total area.

Basic mineral component

Similar to the 2Btng4 horizon but c/f ratio limit at 10 μm is 80:20, light yellow to yellowish brown clay mixed with amorphous iron oxides and impurity microcrystalline halite increases in amount.

Groundmass

Similar to the 2Btng4 horizon but the b-fabric of micromass is nearly parallel striated b-fabric, present about 2-3% of total area.

Pedofeature

Similar to the 2Btng4 horizon but clay and clay mixed with amorphous iron oxide coatings on the wall of voids and quartz grains increase.

2BCrng	164-200+	Microstructure Complex structure composing dominantly of fine cracks in rock structure, some parts are fissure structures and prismatic structures, voids are mainly planar voids (4-20 μm width); total porosity is about 5-6% of total area. Basic mineral component The c/f ratio limit at 10 μm is 20:80. Coarse fraction: Quartz grains are dominant in 20-300 μm size range but decreasing about 60-70%, common subangular to subrounded, some parts are infilled in crack of rock fragments; poorly sorted. Fine fraction: Clay and clay mixed with amorphous iron oxides increase about 60-70%, common reddish brown to dark red fine rock fractions mixed with iron oxides. Groundmass The related distribution pattern is dominantly close porphyric, the b-fabric of micromass is usually stipple-speckled, some parts are parallel striated. Pedofeature Dominant yellowish brown clay coatings on the wall of voids and rock fragments, frequent clay mixed with amorphous iron oxides and impurity microcrystalline halite, some parts are coatings on the wall of voids.

Pedon 27

Horizon	Depth (cm)	Description
Apng	0-20/22	Microstructure Very dominant compact grain structure, some parts are pellicular grain structures; voids are mainly simple packing voids, very few vesicles (40-80 μm), total porosity is about 25-30% of total area. Basic mineral component The c/f ratio limit at 10 μm is 92:8. Coarse fraction: Quartz grains are dominant in fine to coarse sands (8-200 μm), common subangular to subrounded; moderately sorted. Fine fraction: Few fine silt size materials; microcrystalline halite xenotopic, various sizes, present about 10-15% of total area. Basic organic component Few punctuations and organic pigments, very few cell wall residues. Groundmass The c/f distribution pattern is nearly sand monic, some parts are gefuric and chitonic; the b-fabric of micromass is undifferentiated. Pedofeature Sandy pedofeature; impurity microcrystalline halite xenotopic, sizes 20-80 μm, distributed on groundmass and coated on quartz grains, present about 15%; yellowish brown to strong brown iron oxide mottles, various sizes, present about 10% of total area.
Bg	22-40	Similar to the Apng horizon but vesicles increase, very few chambers and planar voids (8μm width, 1,200 μm length) total porosity is about 25%; c/f ratio limit at 10 μm is 95:5; organic component decreases in amount, pseudomorphic (of a plant remnant), geodic and partly impregnative ferruginous nodules, present about 2% of total area.

Btng1	58-82	Similar to the upper part of horizon but chambers (20-80 μm width) and channels (600-800 μm length) increase; total porosity is about 20%, c/f ratio limit at 10 μm is 90:10, fine fractions are increase; few light yellow to yellowish brown coatings on the wall of voids and quartz grains; impurity microcrystalline xenotopics decrease in amount and size, few impurity microcrystalline halite infilled in the voids, sizes 10-20 μm, amorphous iron oxides increase to about 10% of total area.
Btng4	122-143	Microstructure Dominant compact grain structure, very few crack structures; voids are mainly simple packing voids, very few vesicles, planar voids (8-10 μm width), chambers, vughs (160-720 μm), total porosity is about 15% 0f total area. Basic mineral component The c/f ratio limit at 10 μm is 85:15. Groundmass The c/f distribution pattern is porphyric; some parts are gefuric, the b-fabric of the micromass is reticulated striated. Pedofeature Very dominant yellowish brown clay and clay mixed with amorphous iron oxides and impurity microcrystalline on the wall of voids and quartz grains, manganese oxide single ring amiboidal nodule, sizes 200-300 μm, present about 4%, common iron manganese oxide typic nodules, sizes 1,000-2,000 μm.
2Btng6	160-180	Very dominant compact grain structure; voids are mainly simple packing voids, few channels, total porosity is 15% of total area.but the b-fabric of micromass is few circular striated and very few reticulate striated, some parts are mosaic-speckled; pedofeature is dominantly clay mixed with amorphous iron oxides and impurity microcrystalline halite xenotopic coatings on the wall of voids, quartz grains and iron oxide grains.

Pedon 28

Horizon	**Depth (cm)**	**Description**
Apng	0-10/13	Microstructure: Dominant compact grain structure, some parts are pellicular grain structures and single grain structures; voids are mainly simple packing voids, few vesicles (20-50μm) total porosity is about 20% of total area. Basic mineral component The c/f ratio limit at 10 μm is 92:8. Coarse fraction: Quartz grains are dominant in fine to coarse sands (8-200 μm), common subangular to subrounded; moderately sorted. Very few metamorphic quartzs and runi-quartz. Fine fraction: Few fine silt size materials; microcrystalline halite xenotopic, various sizes, present about 10-15% of total area. Basic organic component The lignified tissues residues of pieces of wood, sizes 120-500 μm, present about 2% of total area. Groundmass The c/f distribution pattern is nearly sand monic, some parts are gefuric and chitonic; the b-fabric of micromass is undifferentiated.

		Pedofeature Sandy pedofeature; impurity microcrystalline halite, sizes 20-100 μm, present about 15%, reddish yellow iron oxide mottles, sizes 10-30 μm, present about 10% of total area.
Bng	13-30	Microstructure Similar to Apng horizon but few planar voids (8-10 μm width, 400-600 μm length) very few vughs (100-120 μm); total porosity is about 20% of total area. Basic mineral component The c/f ratio limit at 10 μm is 92:8. Coarse fraction: Quartz grains are dominant (12-500 μm) common subangular to subrounded, very few zircon, sizes 12-20 μm; morderate sorted. Fine fraction: Few fine silt size materials (8-10 μm) impurity microcrystalline halite xenotopic, sizes 3-10 μm, present about 10-15% of total area. Basic organic component: Few plant tissue residues infilled in the voids. Pedofeature Common impurity microcrystalline halite xenotopic, sizes 3-15μm; yellowish brown to reddish brown iron oxide mottles, present about 10-15% of total area.
Btng5	107-138/144	Microstructure Complex structure composing of compact grain structure and pellicular grain structure; voids are mainly simple packing voids, few vesicles (20-50 μm) channels (20 μm width, 50μm length) very few vughs (100-200 μm); total porosity is about 15% of total area. Basic mineral component The c/f ratio limit at 10 μm is 90:10, dominantly quartz grains in 10-20 μm size range, very few zircon, clongated (20μm); light yellow clay coatings on the wall of voids and quartz grains. Groundmass The c/f distribution pattern is chitonic, the b-fabric of the micromass is reticulated striated. Pedofeature Similar to upper part of horizon but few with light yellow clay coatings on the wall of voids and quartz grains, reddish brown iron oxide typic nodules, sizes 1,000-3,000μm, present about 3% of total area.
2Btng6	144-168	Microstructure Complex structure composing of compact grain structure and crack structure; voids are simple packing voids, few planar voids (1-5 μm width), total porosity is about 10% of total area. Basic mineral component The c/f ratio limit at 10 μm is 80:20, quartz grains are dominant in 10-30 μm size range, mostly subangular and few angular, poorly sorted; fine fraction is common light yellow to yellowish brown clay mixed with amorphous iron oxides and microcrystalline halite. Groundmass The c/f distribution pattern is porphyric, the b-fabric of the micromass is stipple speckled. Pedofeature Dominant light yellow to yellowish brown clay mixed with amorphous iron oxide and microcrystalline halite xenotopic coatings on the wall of voids and some parts are infilled in the voids.

APPENDIX C

Appendix Table C1 Physical properties of Salt Affected Soils.

Horizon	Depth (cm)	Particle size distribution (g kg^{-1}) Sand	Silt	Clay	Textural class	Bulk density (Mg m^{-3})	K sat (cm hr^{-1})
Location 1 : Sandy textured salt affected soils *(Roi Et, saline variant)*							
Pedon 1	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic						
Apng	0 -12	685	229	86	Sandy loam	1.73	7.81×10^{-2}
Bng	12-37	727	184	89	Sandy loam	1.61	3.52×10^{-2}
Btng1	37-60	728	143	129	Sandy loam	1.61	1.61×10^{-2}
Btng2	60-76	650	172	178	Sandy loam	1.74	
Btng3	76-100	609	188	203	Sandy clay loam	1.99	
Btng4	100-128	693	137	170	Sandy loam	1.79	
Btng5	128-140	786	80	134	Sandy loam	1.81	
2Btng6	140-170	676	154	170	Sandy loam	1.85	
2Btng7	170-190+	708	138	154	Sandy loam	1.80	
Pedon 2	Typic Natraqualf; coarse-loamy, mixed, semiactive isohyperthemic						
Apng	0-20	727	189	84	Sandy loam	1.65	6.50×10^{-1}
Btng1	20-34	636	222	142	Sandy loam	1.95	3.25×10^{-3}
Btng2	34-55	570	267	163	Sandy loam	1.96	2.52×10^{-3}
Btng3	55-80	479	325	196	Loam	1.92	
Btng4	80-109	517	276	207	Sandy clay loam	1.90	
Btng5	109-130	554	226	220	Sandy clay loam	1.86	
Btcng	130-142	630	162	208	Sandy clay loam	1.89	
2Btng6	142-175	540	227	233	Sandy clay loam	1.95	
2Btng7	175-200	534	241	225	Sandy clay loam	1.96	
Pedon 3	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic						
Apg	0-12	546	338	116	Sandy loam	1.77	1.28×10^{-2}
Btg1	12-20/25	593	286	121	Sandy loam	1.85	1.16×10^{-2}
Btng	25-48/52	549	298	153	Sandy loam	1.74	1.34×10^{-1}
Btg2	52-80/85	519	312	169	Loam	1.85	
Btg3	85-110	531	259	210	Sandy clay loam	1.93	
Btg4	110-130	549	265	186	Sandy loam	1.90	
Btg5	130-153	660	195	145	Sandy loam	1.79	
2Btg6	153-180	771	85	144	Sandy loam	1.72	
2Btg7	180-205+	793	66	141	Sandy loam	1.86	
Pedon 4	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic						
Apng	0-20	381	453	166	Loam	1.70	1.43×10^{-1}
Btng1	20-48	678	197	125	Sandy loam	1.69	2.63×10^{-2}
Btg1	48-70	673	219	108	Sandy loam	1.64	1.96×10^{-1}
Btg2	70-95	591	203	206	Sandy clay loam	1.77	
Btng2	95-130	600	226	174	Sandy loam	1.92	
Btng3	130-148/150	590	235	175	Sandy loam	1.90	
2Btng4	150-180	603	214	183	Sandy loam	1.87	
2Btng5	180-200+	625	176	199	Sandy loam	1.81	

Appendix Table C1 (Continued)

Horizon	Depth (cm)	Particle size distribution (g kg^{-1}) Sand	Silt	Clay	Textural class	Bulk density (Mg m^{-3})	K sat (cm hr^{-1})
Pedon 5 Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic							
Apng	0-20	639	285	76	Sandy loam	1.84	3.22 x 10^{-1}
Btg1	20-40	665	226	109	Sandy loam	1.82	8.06 x 10^{-1}
Btg2	40-70	616	180	204	Sandy clay loam	1.81	6.45 x 10^{-2}
Btg3	70-90	622	166	212	Sandy clay loam	1.81	
Btg4	90-112	619	166	215	Sandy clay loam	1.82	
Btg5	112-140	614	167	219	Sandy clay loam	1.89	
Btg6	140-170	612	189	199	Sandy loam	1.90	
Btg7	170-193	612	189	199	Sandy loam	1.83	
Location 2 : Clayey textured salt affected soils *(Phimai series)*							
Pedon 6 Typic Natraqualf; fine, kaolinitic, isohyperthemic							
Apng1	0-10	352	245	403	Clay	1.78	8.75 x 10^{-2}
Apng2	10-20	287	168	545	Clay	1.76	1.95 x 10^{-3}
Btng1	20-33	332	178	490	Clay	1.87	4.30 x 10^{-3}
Btng2	33-48	406	192	402	Clay	1.84	
Btng3	48-70	381	200	419	Clay	1.94	
Btng4	70-88	423	216	361	Clay loam	1.90	
2Btng5	88-114	477	200	323	Sandy clay loam	1.87	
2Btng6	114-135	514	201	285	Sandy clay loam	1.77	
2Btng7	135-156	580	178	242	Sandy clay loam	1.75	
2Btng8	156-190	699	97	204	Sandy clay loam	1.80	
Pedon 7 Typic Natraqualf; very fine, kaolinitic, isohyperthemic							
Apg1	0-18	235	261	504	Clay	1.87	1.10 x 10^{-3}
Apg2	18-30	190	290	520	Clay	1.75	1.44 x 10^{-3}
Btg	30-42	234	267	499	Clay	1.68	1.21 x 10^{-3}
Btng1	42-53/64	135	226	639	Clay	1.84	
Btng2	64-79	155	201	644	Clay	1.86	
Btng3	79-100	135	219	646	Clay	1.82	
Btng4	100-124	172	272	556	Clay	1.87	
Btng5	124-151	234	275	491	Clay	1.94	
2Btng6	151-176	363	242	395	Clay loam	1.88	
2Btng7	176-200	628	104	268	Sandy clay loam	1.81	
Pedon 8 Typic Natraqualf; fine, kaolinitic, isohyperthemic							
Apg	0-11	213	264	523	Clay	1.80	1.04 x 10^{-3}
Btg1	11-32	132	206	662	Clay	1.78	9.51 x 10^{-3}
Btg2	32-56	164	228	608	Clay	1.82	2.11 x 10^{-2}
Btng1	56-65/85	180	253	567	Clay	1.85	
Btng2	85-110	167	265	568	Clay	1.92	
Btng3	110-124	181	211	608	Silt loam	1.93	
2Btng4	124-152	80	71	849	Clay	1.85	
2Btng5	152-180+	174	186	640	Clay	1.92	

Appendix Table 1 C1 (Continued)

Horizon	Depth (cm)	Particle size distribution (g kg^{-1}) Sand	Silt	Clay	Textural class	Bulk density ($Mg\ m^{-3}$)	K sat ($cm\ hr^{-1}$)
Pedon 9 Typic Endoaqualf; fine, kaolinitic, isohyperthemic							
Apg1	0-10	424	229	347	Clay loam	1.62	3.84
Apg2	10-22	403	234	363	Clay loam	1.88	1.53×10^{-3}
Btg1	22-38	315	229	456	Clay	1.68	2.81×10^{-2}
Btg2	38-60	224	225	551	Clay	1.79	
Btg3	60-83	259	222	519	Clay	1.93	
Btg4	83-102	250	285	465	Clay	1.91	
2Btg5	102-121	346	289	365	Clay loam	1.87	
2Btg6	121-140	395	292	313	Clay loam	1.84	
2Btg7	140-162	522	208	270	Sandy clay loam	1.81	
2Btg8	162-190	556	208	236	Sandy clay loam	1.75	
Pedon 10 Typic Natraqualf; fine, kaolinitic, isohyperthemic							
Apg	0-16	363	290	348	Clay loam	1.51	2.40
Btg1	16-31	254	283	463	Clay	1.74	2.76×10^{-3}
Btg2	31-52	202	282	516	Clay	1.78	3.25×10^{-2}
Btg3	52-69	203	244	553	Clay	1.83	
Btg4	69-95	130	274	596	Clay	1.79	
2Btng1	95-128	164	302	534	Clay	1.84	
2Btng2	128-161	180	285	535	Clay	1.93	
2Btng3	161-187	223	291	486	Clay	1.96	
2Btng4	187-210+	294	325	381	Clay loam	1.92	
Location 3 : Sandy over clayey textures salt affected soils *(Kula Ronghai series)*							
Pedon 11 Typic Natraqualf; fine, kaolinitic, isohyperthemic							
Apg	0-15/23	642	248	110	Sandy loam	1.53	3.21×10^{-1}
Bcg	23-46	338	246	416	Clay	1.99	2.81×10^{-1}
Btg1	46-65	253	291	456	Clay	1.95	3.62×10^{-1}
Btg2	65-88	276	309	415	Clay	1.90	
Btg3	88-113	297	334	369	Clay loam	1.90	
2Btng1	113-140	331	348	321	Clay loam	1.86	
2Btng2	140-172	328	377	295	Clay loam	1.91	
2Btng3	172-205+	254	415	331	Clay loam	1.94	
Pedon 12 Typic Natraqualf; fine, kaolinitic, isohyperthemic							
Apg	0-19/20	636	291	73	Sandy loam	1.53	6.02×10^{-1}
Apng	20-27/32	697	246	57	Sandy loam	1.68	4.93×10^{-1}
Bcg	32-54/63	450	214	336	Sandy clay loam	1.90	2.11×10^{-1}
Btg1	63-82/87	334	231	435	Clay	1.99	
Btg2	87-111/114	336	271	393	Clay loam	1.98	
2Btg3	114-137	334	340	326	Clay loam	1.94	
2Btg4	137-155	326	304	370	Clay loam	1.91	
2Btng1	155-183	381	297	322	Clay loam	1.91	
2Btng2	183-207+	343	374	283	Clay loam	1.88	

Appendix Table C1 (Continued)

Horizon	Depth (cm)	Particle size distribution (g kg^{-1}) Sand	Silt	Clay	Textural class	Bulk density (Mg m^{-3})	K sat (cm hr^{-1})
Pedon13	Typic Endoaqualf; fine, kaolinitic, isohyperthemic						
Apg1	0-18	708	216	76	Sandy loam	1.59	8.55 x 10^{-1}
Apg2	18-30	841	92	67	Loamy sand	1.69	3.96 x 10^{-1}
Btg1	30-48	383	163	454	Clay	1.88	3.29 x 10^{-1}
Btg2	48-73	287	247	466	Clay	1.87	
Btg3	73-91	323	285	392	Clay loam	1.94	
2Btg4	91-118	314	314	372	Clay loam	1.89	
2Btg5	118-150	301	328	371	Clay loam	1.87	
2Btg6	150-185	243	305	452	Clay	1.87	
2Btg7	185-210+	221	332	447	Clay	1.90	
Pedon 14	Typic Natraqualf; fine-loamy, mixed, active, isohyperthemic						
Apg	0-28	644	321	35	Sandy loam	1.39	5.50 x 10^{-1}
Bng	28-44	675	247	78	Sandy loam	1.95	1.85 x10^{-1}
Bcg	44-66	372	139	489	Clay	1.96	2.80
Btng1	66-85	463	165	372	Sandy clay loam	2.00	
Btng2	85-110	402	236	362	Clay loam	1.96	
Btng3	110-137	353	263	384	Clay loam	1.91	
2Btng4	137-161	390	270	340	Clay loam	1.95	
2Btng5	161-183	369	283	348	Clay loam	1.91	
2Btg	183-206+	367	290	343	Clay loam	1.84	
Pedon 15	Typic Natraqualf; fine, kaolinitic, isohyperthemic						
Apg	0-15	666	236	98	Sandy loam	1.74	6.53 x 10^{-1}
Bcg	15-50	383	178	439	Clay	1.97	6.86
Btg1	50-70	359	224	417	Clay	1.99	3.40 x10^{-1}
Btg2	70-90	367	222	411	Clay	1.97	
Btg3	90-110	398	197	405	Clay	1.92	
2Btg4	110-130	378	269	353	Clay loam	1.94	
2Btng1	130-153	378	279	343	Clay loam	1.90	
2Btg5	153-182	370	280	350	Clay loam	1.81	
2Btng2	182-200	367	115	518	Clay loam	1.83	
Pedon 16	Typic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic						
Apg1	0-16/18	702	223	75	Sandy loam	1.50	1.28
Apg2	18-21/28	733	184	83	Sandy loam	1.72	6.21 x 10^{-1}
Bcng	28-47/57	456	149	395	Sandy clay loam	2.07	3.51 x10^{-1}
Btng1	57-72	406	261	333	Clay loam	1.98	
Btng2	72-94	462	225	313	Sandy clay loam	2.19	
Btng3	94-113	467	195	338	Sandy clay loam	1.94	
2Btng4	113-138	470	191	339	Sandy clay loam	1.90	
2Btg	138-169	486	229	285	Sandy clay loam	1.90	
2Btng5	169-202+	469	250	281	Sandy clay loam	1.88	

Appendix Table C1 (Continued)

Horizon	Depth (cm)	Particle size distribution (g kg^{-1}) Sand	Silt	Clay	Textural class	Bulk density (Mg m^{-3})	K sat (cm hr^{-1})
Location 4 : Clayey textured salt affected soils *(Udon series)*							
Pedon 17	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic						
Ang	0-20	58	280	662	Clay	1.92	1.78x10^{-3}
ABng	20-36	116	297	587	Clay	1.69	2.43x10^{-4}
Btng1	36-60	157	380	463	Clay	2.26	9.99x10^{-4}
Btng2	60-85	139	364	497	Clay	1.80	
Btng3	85-110	137	370	493	Clay	1.86	
Btng4	110-130	103	361	536	Clay	1.98	
Bssg1	130-165	78	183	739	Clay	1.99	
Bssg2	165-200+	96	80	824	Clay	1.95	
Pedon 18	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic						
Ang	0-19	111	319	570	Clay	1.89	2.68x10^{-3}
Btng1	19-43	93	333	574	Clay	1.80	2.31x10^{-3}
Btng2	43-64	76	371	553	Clay	1.84	1.16x10^{-3}
Btng3	64-94	58	386	556	Clay	1.87	
Btng4	94-113	61	433	506	Silty clay	1.91	
Btng5	113-140	113	429	458	Silty clay	1.96	
2Btg	140-169	292	421	287	Clay loam	1.90	
2Btng6	169-195+	204	338	458	Clay	1.90	
Pedon 19	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic						
Ang	0-19	182	303	515	Clay	1.79	1.03x10^{-3}
Btng1	19-38	160	334	506	Clay	1.77	1.71x10^{-3}
Btng2	38-56	184	259	557	Clay	1.80	4.97x10^{-2}
Btng3	56-77	298	211	491	Clay	1.89	
2Btng4	77-100	520	182	298	Sandy clay loam	1.88	
2Btng5	100-119	808	40	152	Sandy loam	2.43	
2Btng6	119-146	875	24	101	Loamy sand	2.15	
2Btng7	146-175	721	120	159	Sandy loam	1.79	
2Btng8	175-210+	655	140	205	Sandy clay loam	1.73	
Pedon 20	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic						
Ang	0-20	153	315	532	Clay	1.88	4.00x10^{-3}
Btng1	20-44	142	302	556	Clay	2.39	9.72x10^{-4}
Btng2	44-66	147	314	539	Clay	1.95	7.33x10^{-4}
Btng3	66-89	165	307	528	Clay	1.95	
Btng4	89-113	269	261	470	Clay	2.00	
Btng5	113-139	450	197	353	Sandy clay	2.01	
Btng6	139-171	315	181	504	Clay	1.95	
Btng7	171-200+	107	110	783	Clay	1.96	

Appendix Table C1 (Continued)

Horizon	Depth (cm)	Particle size distribution (g kg^{-1})			Textural class	Bulk density (Mg m^{-3})	K sat (cm hr^{-1})
		Sand	Silt	Clay			
Pedon 21	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic						
Ang	0-18	83	256	661	Clay	1.95	$2.17x10^{-3}$
Btng1	18-45	87	336	577	Clay	1.82	$1.20x10^{-3}$
Btng2	45-68	98	353	549	Clay	1.82	$1.51x10^{-3}$
Btng3	68-89	67	365	568	Clay	1.86	
Btng4	89-112	75	343	582	Clay	1.93	
Btng5	112-137	72	281	647	Clay	1.97	
Btng6	137-161	65	163	772	Clay	1.95	
Btng7	161-200+	74	38	888	Clay	1.93	
Pedon 22	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic						
Ang	0-21	176	311	513	Clay	1.79	$1.82x10^{-3}$
Btng1	21-41	174	317	509	Clay	1.83	$1.06x10^{-3}$
Btng2	41-66	167	316	517	Clay	1.83	$1.60x10^{-3}$
Btng3	66-88	105	248	647	Clay	1.94	
Btng4	88-108	75	197	728	Clay	1.96	
Btng5	108-132	58	93	849	Clay	1.96	
Btng6	132-165	38	3	959	Clay	1.89	
Btng7	165-184	66	19	915	Clay	1.89	
Btng8	184-202+	55	43	902	Clay	1.92	
Location 5 : Sandy textured salt affected soils *(Roi Et, saline variant 2)*							
Pedon 23	Typic Natraqualf; sandy, silicious, subactive, isohyperthemic						
Apng	0-11	867	67	66	Loamy sand	1.75	6.62×10^{-1}
Bng1	11-30	875	79	46	Loamy sand	1.67	1.09
Bng2	30-47	853	98	49	Loamy sand	1.61	2.33
Btng1	47-69	847	99	54	Loamy sand	1.64	
Btng2	69-95	803	59	138	Sandy loam	1.82	
Btng3	95-110	779	73	148	Sandy loam	1.76	
Btng4	110-130	778	74	148	Sandy loam	1.82	
Btng5	130-153	757	90	153	Sandy loam	1.87	
2Btng6	153-178	636	128	236	Sandy clay loam	2.00	
2Btng7	178-200+	564	157	279	Sandy clay loam	1.86	
Pedon 24	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic						
Apng	0-12	752	148	100	Sandy loam	1.58	4.31×10^{-1}
Btng1	12-30	738	119	143	Sandy loam	1.82	$1.02x10^{-3}$
Btng2	30-53	697	151	152	Sandy loam	1.75	$6.38x10^{-3}$
Btng3	53-73	659	203	138	Sandy loam	1.82	
Btng4	73-100	655	152	193	Sandy loam	2.03	
Btng5	100-128	667	125	208	Sandy clay loam	1.99	
2Btng6	128-155	614	141	245	Sandy clay loam	1.95	
2Crtng	155-200+	381	278	341	Clay loam	1.92	

Appendix Table C1 (Continued)

Horizon	Depth (cm)	Particle size distribution (g kg^{-1}) Sand	Silt	Clay	Textural class	Bulk density (Mg m^{-3})	K sat (cm hr^{-1})
Pedon 25	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic						
Apg	0-17/30	757	171	72	Sandy loam	1.62	1.17
Bg	17-30	771	156	73	Loamy sand	1.67	9.29 x 10^{-1}
Btng1	30-52	705	167	128	Sandy loam	1.87	6.21x10^{-2}
Btng2	52-71	670	151	179	Sandy loam	1.96	
Btng3	71-92	661	163	176	Sandy loam	1.95	
2BCrng1	92-120	442	220	338	Clay loam	1.91	
2BCrng2	120-143	353	257	390	Clay loam	1.79	
2BCrg	143-170	159	394	447	Silty clay	1.82	
2BCrng3	170-200	159	376	465	Silty clay	1.66	
Pedon 26	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic						
Apg	0-14	868	82	50	Loamy sand	1.62	2.08
Bng	14-31/46	839	94	67	Loamy sand	1.62	7.50 x 10^{-1}
Btng1	46-53	789	78	133	Sandy loam	1.70	6.53 x 10^{-1}
Btng2	53-73	744	72	184	Sandy loam	1.76	
Btng3	73-92	703	129	168	Sandy loam	1.86	
2Btng4	92-114	647	132	221	Sandy clay loam	2.08	
2Btng5	114-137	642	135	223	Sandy clay loam	1.98	
2Btng6	137-164	558	166	276	Sandy clay loam	1.97	
2BCrng	164-200+	443	184	373	Sandy clay loam	1.90	
Pedon 27	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic						
Apng	0-20/22	864	86	50	Loamy sand	1.56	3.41
Bg	22-40	868	73	59	Loamy sand	1.62	1.90
Bng	40-58	853	93	54	Loamy sand	1.61	2.69
Btng1	58-82	760	75	165	Sandy loam	1.75	
Btng2	82-104	755	93	152	Sandy loam	1.76	
Btng3	104-122	689	102	209	Sandy clay loam	1.90	
Btng4	122-143	699	74	227	Sandy clay loam	1.97	
Btng5	143-160	688	82	230	Sandy clay loam	1.96	
2Btng6	160-180	692	97	211	Sandy clay loam	1.93	
2Btng7	180-202+	625	147	228	Sandy clay loam	2.02	
Pedon 28	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic						
Apng	0-10/13	837	121	42	Loamy sand	1.50	2.06
Bng	13-30	824	139	37	Loamy sand	1.66	1.38
Btng1	30-44	763	132	105	Sandy loam	1.67	2.99x10^{-2}
Btng2	44-66	758	125	117	Sandy loam	1.71	
Btng3	66-86	794	85	121	Sandy loam	1.72	
Btng4	86-107	805	61	134	Sandy loam	1.77	
Btng5	107-138/144	621	219	160	Sandy loam	1.84	
2Btng6	144-168	628	137	235	Sandy clay loam	1.93	
2Btng7	168-200	457	146	397	Sandy clay	1.95	

Appendix Table C2 Chemical properties of Salt affected Soils.

Soils samples	Depth	pH			OM	Total N	Avai.P	Avai.K	Exchangeable bases				Sum bases	EA	CEC		BS		EC (sat.)	SAR	ESP
		H_2O	KCl	Sat.					Ca	Mg	K	Na			Sum	NH_4OAc	Sum	NH_4OAc			
	(cm)				(..g kg^{-1}..)		(...mg kg^{-1}…)		(…… cmol kg^{-1}……)								(..……%.....)		dSm^{-1}		%
Location 1: Sandy textured salt affected soils *(Roi Et, saline variant)*																					
Pedon 1	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																				
Apng	0 -12	8.1	7.8	7.8	3.52	0.09	12.37	24.65	5.62	0.87	0.06	0.85	7.42	0.61	8.03	1.33	92.38	2195.24	114.3	77.3	64.18
Bng	12-37	8.5	6.9	7.9	1.04	0.05	3.53	17.96	0.53	0.34	0.05	0.98	1.89	2.08	3.97	1.61	47.54	221.42	9.0	25.4	60.92
Btng1	37-60	8.3	6.7	7.6	0.69	0.05	1.55	26.17	0.69	0.50	0.07	1.53	2.79	1.49	4.28	2.87	65.15	158.07	9.5	25.9	53.41
Btng2	60-76	8.3	6.7	7.6	0.70	0.05	1.56	39.20	1.29	0.75	0.10	2.13	4.26	1.81	6.07	5.58	70.21	124.23	8.9	23.4	38.15
Btng3	76-100	8.7	7.2	7.7	0.70	0.06	0.56	51.52	8.90	0.96	0.13	2.65	12.65	2.10	14.76	6.51	85.74	240.85	6.8	22.2	40.69
Btng4	100-128	8.2	6.6	7.3	0.70	0.04	0.22	45.91	1.13	0.73	0.12	2.53	4.51	2.42	6.94	5.53	65.05	135.74	8.6	23.7	45.81
Btng5	128-140	7.5	6.9	7.2	0.52	0.02	0.22	39.85	0.73	0.55	0.10	1.93	3.31	2.70	6.02	4.30	55.07	145.01	7.4	25.2	44.89
2Btng6	140-170	7.6	6.2	7.0	0.35	0.02	0.22	46.02	1.10	0.77	0.12	2.98	4.97	2.72	7.69	5.79	64.66	135.70	7.2	25.1	51.45
2Btng7	170-190+	7.6	6.4	7.3	0.52	0.01	3.55	43.21	0.83	0.63	0.11	2.20	3.76	2.12	5.88	4.45	63.99	156.50	11.9	26.1	49.37
Pedon 2	Typic Natraqualf; coarse-loamy, mixed, semiactive isohyperthemic																				
Apng	0-20	6.9	5.3	7.4	3.10	0.12	3.85	11.56	0.38	0.18	0.03	0.27	0.86	2.07	2.92	1.20	29.26	106.76	2.8	8.1	22.78
Btng1	20-34	8.5	6.5	8.0	0.87	0.08	0.55	15.00	0.99	0.45	0.04	2.00	3.47	2.72	6.19	3.74	56.09	121.29	5.1	46.0	53.40
Btng2	34-55	8.7	6.7	7.8	0.52	0.07	0.56	19.92	1.23	0.50	0.05	3.49	5.27	2.09	7.36	6.45	71.58	109.26	2.9	20.2	54.05
Btng3	55-80	8.8	7.3	7.5	0.52	0.05	0.56	28.04	3.69	0.66	0.07	3.74	8.16	3.00	11.16	8.39	73.12	127.07	2.0	33.2	44.63
Btng4	80-109	8.4	6.9	7.3	0.35	0.03	0.22	29.73	1.30	0.52	0.08	3.85	5.74	2.09	7.84	6.90	73.29	110.25	3.0	17.0	55.80
Btng5	109-130	8.4	6.8	7.6	0.70	0.02	0.22	34.14	1.35	0.53	0.09	3.92	5.89	1.80	7.68	7.23	76.61	112.25	3.5	16.4	54.27
Btcng	130-142	8.7	7.1	8.0	0.35	0.04	0.06	39.31	1.34	0.59	0.10	4.12	6.14	2.12	8.27	8.24	74.34	99.38	4.7	35.4	49.95
2Btng6	142-175	8.5	6.5	7.1	0.53	0.02	0.06	44.21	1.24	0.66	0.11	4.65	6.66	2.71	9.37	8.87	71.05	102.53	4.1	29.5	52.36
2Btng7	175-200	8.2	6.7	7.0	0.18	0.02	0.06	47.95	1.05	0.63	0.12	4.40	6.19	4.52	10.71	8.69	57.82	99.42	3.6	26.4	50.56
Pedon 3	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																				
Apg	0-12	5.8	5.5	7.2	5.19	0.26	4.53	40.60	2.09	0.68	0.10	0.23	3.10	1.20	4.29	3.23	72.12	215.48	23.7	10.5	7.09
Btg1	12-20/25	6.0	5.1	6.9	0.86	0.07	0.55	18.12	1.58	0.51	0.05	0.18	2.32	1.48	3.81	2.72	61.03	154.36	12.0	6.7	6.66
Btng	25-48/52	5.7	4.2	6.1	1.04	0.10	0.89	15.90	1.85	0.55	0.04	0.64	3.09	2.41	5.49	3.73	56.22	99.86	3.1	6.0	17.27
Btg2	52-80/85	5.1	3.8	5.5	0.52	0.07	0.56	16.30	2.04	0.64	0.04	0.77	3.49	3.89	7.38	5.67	47.30	70.27	2.9	5.0	13.56
Btg3	85-110	4.4	3.5	5.6	0.35	0.04	0.22	19.15	2.56	0.82	0.05	0.59	4.01	5.98	9.99	7.05	40.17	70.17	4.6	4.4	8.31
Btg4	110-130	4.2	3.7	5.6	0.35	0.05	0.22	16.44	2.82	0.86	0.04	0.68	4.40	2.71	7.10	6.52	61.90	85.95	5.1	3.9	10.39
Btg5	130-153	4.5	4.0	6.1	0.35	0.05	0.22	10.47	2.04	0.61	0.03	0.30	2.97	1.50	4.47	4.35	66.46	88.82	5.1	4.0	6.80
2Btg6	153-180	4.8	4.1	6.5	0.35	0.05	0.22	12.50	2.03	0.62	0.03	0.45	3.14	0.89	4.04	4.75	77.83	81.03	3.9	4.2	9.48
2Btg7	180-205+	4.7	3.8	5.8	0.52	0.04	0.22	10.90	1.29	0.49	0.03	0.41	2.21	2.09	4.30	4.19	51.43	63.93	2.2	4.3	9.76

Appendix Table C2 (Continued)

Soils samples	Depth	pH			OM	Total N	Avai.P	Avai.K	Exchangeable bases				Sum bases	EA	CEC		BS		EC (sat.)	SAR	ESP
		H_2O	KCl	Sat.					Ca	Mg	K	Na			Sum	NH_4OAc	Sum	NH_4OAc			
	(cm)				(...g kg^{-1}…)		(…mg kg^{-1}…)		(…… cmol kg^{-1} ……)						(…….%.....)				dSm^{-1}		%
Pedon 4	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																				
Apng	0-20	5.3	5.1	6.7	9.75	0.38	1.72	17.31	2.85	0.71	0.04	0.90	4.50	2.39	6.89	5.32	65.33	152.77	11.9	7.1	16.91
Btng1	20-48	4.7	4.2	6.5	1.04	0.07	0.72	8.80	1.45	0.39	0.02	0.56	2.43	1.19	3.62	3.07	67.02	141.28	12.4	8.2	18.16
Btg1	48-70	4.1	3.8	4.9	0.69	0.05	0.55	8.24	1.03	0.29	0.02	0.32	1.67	2.09	3.76	3.18	44.35	109.13	9.2	8.3	10.15
Btg2	70-95	4.2	3.5	4.3	1.05	0.12	0.56	15.39	1.68	0.45	0.04	0.70	2.87	5.42	8.29	6.97	34.58	71.75	6.2	7.7	10.08
Btng2	95-130	4.4	3.7	4.8	0.35	0.03	0.22	11.44	1.66	0.43	0.03	1.02	3.14	3.02	6.17	6.39	50.98	75.66	6.1	8.6	16.04
Btng3	130-148/150	7.0	5.5	7.1	0.35	0.03	0.22	13.88	3.27	0.88	0.04	2.14	6.33	1.20	7.53	7.52	84.08	111.38	7.0	9.9	28.52
2Btng4	150-180	7.6	5.8	7.2	0.35	0.03	0.22	14.26	3.05	0.92	0.04	2.08	6.08	0.61	6.69	7.53	90.95	108.36	6.5	9.2	27.64
2Btng5	180-200+	7.7	6.0	7.1	0.17	0.01	0.56	18.80	3.53	1.06	0.05	2.63	7.28	1.81	9.08	8.39	80.11	111.52	7.1	9.3	31.37
Pedon 5	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																				
Apng	0-20	4.9	4.4	6.0	4.14	0.12	0.88	13.00	0.90	0.28	0.03	0.42	1.63	1.49	3.12	2.16	52.15	120.39	9.0	6.1	19.52
Btg1	20-40	4.5	3.9	5.7	1.90	0.08	0.55	8.15	0.74	0.23	0.02	0.33	1.31	0.90	2.21	2.36	59.42	99.12	7.6	5.6	13.79
Btg2	40-70	4.4	3.5	4.8	1.75	0.09	0.89	13.19	1.40	0.41	0.03	0.40	2.24	4.24	6.47	4.96	34.52	65.68	4.3	5.1	8.02
Btg3	70-90	4.2	3.7	4.4	1.23	0.08	1.23	10.85	1.08	0.38	0.03	0.39	1.88	4.87	6.75	7.36	27.81	42.63	6.3	6.3	5.27
Btg4	90-112	4.3	3.7	4.5	1.22	0.05	1.56	10.53	1.18	0.35	0.03	0.22	1.77	4.23	5.99	4.39	29.52	68.42	4.8	5.1	4.90
Btg5	112-140	4.3	3.7	4.9	1.39	0.07	1.22	9.65	1.06	0.29	0.02	0.25	1.62	4.55	6.17	5.06	26.28	52.01	4.5	5.0	4.89
Btg6	140-170	4.2	3.8	4.8	0.52	0.05	1.56	11.64	0.99	0.32	0.03	0.37	1.70	3.00	4.70	4.91	36.25	52.00	4.7	4.8	7.45
Btg7	170-193	4.2	3.8	5.4	0.70	0.05	1.06	10.36	1.02	0.33	0.03	0.27	1.65	3.63	5.28	5.12	31.18	47.77	3.3	4.3	5.35
Location 2: Clayey textured salt affected soils *(Phimai series)*																					
Pedon 6	Typic Natraqualf; fine, kaolinitic, isohyperthemic																				
Apng1	0-10	5.4	4.9	5.8	12.25	0.56	2.30	55.84	9.65	2.21	0.14	3.18	15.19	8.34	23.53	16.48	64.54	160.38	60.5	10.4	19.31
Apng2	10-20	5.5	4.7	5.9	7.86	0.44	1.11	52.82	9.25	1.76	0.14	4.21	15.36	9.20	24.56	20.09	62.55	103.74	11.3	5.4	20.96
Btng1	20-33	6.1	5.7	6.1	4.54	0.27	1.28	38.99	8.11	1.48	0.10	4.31	13.99	5.98	19.97	16.61	70.06	110.76	9.6	7.7	25.93
Btng2	33-48	6.6	5.8	6.1	3.27	0.22	1.28	27.29	7.47	1.22	0.07	4.25	13.00	3.13	16.13	13.82	80.62	118.69	8.6	8.0	30.76
Btng3	48-70	6.8	6.1	6.1	1.98	0.16	1.37	30.27	7.29	1.39	0.08	4.36	13.11	3.10	16.21	15.45	80.89	109.63	9.0	8.3	28.20
Btng4	70-88	7.0	6.1	6.3	1.43	0.11	0.91	31.44	7.69	1.31	0.08	3.68	12.76	3.09	15.85	14.69	80.51	112.13	7.2	8.4	25.03
2Btng5	88-114	7.1	6.1	6.4	0.71	0.09	0.23	30.36	6.66	1.22	0.08	3.86	11.82	2.45	14.28	13.09	82.81	113.39	8.2	9.1	29.48
2Btng6	114-135	7.2	6.1	6.3	0.53	0.06	0.23	31.79	6.39	1.17	0.08	3.19	10.84	3.08	13.91	12.86	77.87	112.50	14.2	12.6	24.84
2Btng7	135-156	7.2	6.1	6.3	0.70	0.07	0.39	23.44	4.95	0.96	0.06	2.96	8.94	2.42	11.36	9.42	78.67	126.63	12.4	8.7	31.48
2Btng8	156-190	7.2	6.2	6.3	0.18	0.05	0.22	26.69	3.99	0.80	0.07	2.11	6.96	2.13	9.09	7.41	76.60	140.41	16.2	10.3	28.48

Appendix Table C2 (Continued)

Soils samples	Depth	pH			OM	Total N	Avai.P	Avai.K	Exchangeable bases				Sum bases	EA	CEC		BS		EC	SAR	ESP
		H_2O	KCl	Sat.					Ca	Mg	K	Na			Sum	NH_4OAc	Sum	NH_4OAc	(sat.)		
	(cm)				(...g kg^{-1}…)		(…mg kg^{-1}…)		(…. cmol kg^{-1} ……)						(…….%.....)				dSm^{-1}		%
Pedon 7	Typic Natraqualf; very fine, kaolinitic, isohyperthemic																				
Apg1	0-18	5.2	4.6	6.2	22.01	0.94	2.48	54.11	10.78	1.88	0.14	2.69	15.49	12.41	27.90	19.69	55.51	95.49	10.3	4.8	13.66
Apg2	18-30	4.9	4.1	6.0	15.54	0.70	0.40	47.48	9.99	1.80	0.12	1.85	13.76	13.57	27.33	21.74	50.34	79.79	8.7	5.1	8.50
Btg1	30-42	4.9	4.1	6.1	10.26	0.49	0.58	48.09	8.98	1.56	0.12	2.04	12.70	12.46	25.16	19.57	50.48	82.54	7.2	5.1	10.41
Btng1	42-53/64	5.3	4.6	6.1	8.23	0.47	0.23	57.07	13.19	2.10	0.15	4.24	19.68	12.01	31.69	25.89	62.10	90.83	7.1	5.6	16.38
Btng2	64-79	5.8	5.1	6.1	6.59	0.30	0.23	54.36	11.71	2.20	0.14	4.95	19.00	9.45	28.45	25.55	66.78	89.30	6.5	6.3	19.36
Btng3	79-100	6.0	5.3	6.2	5.29	0.26	0.41	43.35	11.51	1.90	0.11	5.34	18.85	8.18	27.03	22.72	69.74	96.25	7.3	7.0	23.49
Btng4	100-124	6.3	5.5	6.3	2.72	0.13	0.41	36.45	9.85	1.70	0.09	4.52	16.16	6.89	23.05	19.23	70.12	104.98	7.6	7.6	23.53
Btng5	124-151	6.6	5.7	6.2	0.90	0.16	0.23	32.49	9.70	1.62	0.08	5.33	16.73	4.97	21.70	19.59	77.09	105.72	6.4	7.5	27.19
2Btng6	151-176	6.7	5.7	6.4	0.53	0.11	0.34	33.71	8.06	1.41	0.09	4.24	13.79	3.71	17.50	15.10	78.81	112.76	8.6	8.1	28.05
2Btng7	176-200	6.8	5.9	6.2	0.35	0.10	0.40	21.93	4.87	1.02	0.06	2.44	8.39	2.46	10.84	9.56	77.35	123.10	13.2	9.3	25.53
Pedon 8	Typic Natraqualf; fine, kaolinitic, isohyperthemic																				
Apg	0-11	5.1	4.5	6.0	21.54	0.92	9.84	83.07	11.64	2.32	0.21	1.97	16.15	10.06	26.21	21.49	61.61	95.92	13.4	4.2	9.18
Btg1	11-32	5.4	4.4	6.1	9.53	0.45	0.87	52.79	12.34	2.16	0.14	2.45	17.09	10.52	27.62	23.82	61.89	81.79	5.5	3.8	10.30
Btg2	32-56	5.9	5.2	6.1	6.70	0.34	0.86	34.13	12.00	1.82	0.09	2.14	16.05	6.60	22.65	21.23	70.84	86.55	5.3	4.3	10.08
Btng1	56-65/85	6.3	5.7	6.1	4.15	0.26	0.85	54.94	12.82	1.95	0.14	3.12	18.03	2.81	20.84	19.94	86.52	102.80	4.7	4.5	15.64
Btng2	85-110	6.5	5.8	6.1	2.71	0.16	0.85	35.20	13.07	1.93	0.09	3.47	18.56	2.81	21.38	20.72	86.84	103.73	5.0	5.0	16.74
Btng3	110-124	6.4	5.8	6.3	1.27	0.15	0.51	38.07	12.08	2.05	0.10	4.11	18.33	3.15	21.49	20.85	85.34	105.83	5.8	5.2	19.71
2Btng4	124-152	6.7	5.8	6.3	0.93	0.16	0.19	59.69	18.32	3.15	0.15	6.18	27.79	5.80	33.59	31.14	82.74	108.07	7.5	5.8	19.84
2Btng5	152-180+	6.7	6.0	6.4	0.55	0.16	0.19	50.17	13.91	2.42	0.13	5.25	21.71	4.12	25.83	24.44	84.04	109.77	8.4	6.2	21.50
Pedon 9	Typic Endoaqualf; fine, kaolinitic, isohyperthemic																				
Apg1	0-10	5.4	4.8	6.1	20.22	0.93	8.97	61.82	6.92	1.40	0.16	0.80	9.28	6.72	16.00	12.84	57.98	101.18	11.1	4.0	6.25
Apg2	10-22	5.7	4.9	6.3	9.75	0.52	1.35	41.84	6.84	1.28	0.11	1.38	9.61	6.48	16.09	12.70	59.75	84.03	3.4	3.1	10.90
Btg1	22-38	5.3	4.7	6.1	7.55	0.45	0.51	42.51	8.55	1.49	0.11	1.34	11.50	7.72	19.22	16.44	59.83	77.62	3.6	3.0	8.16
Btg2	38-60	5.3	4.6	6.1	6.69	0.37	0.68	39.71	9.68	1.65	0.10	1.19	12.62	8.18	20.81	19.17	60.67	73.33	3.7	3.1	6.19
Btg3	60-83	5.6	5.1	6.3	3.80	0.22	0.68	32.49	11.60	1.76	0.08	1.60	15.05	6.85	21.90	18.99	68.74	87.39	3.9	3.3	8.43
Btg4	83-102	6.3	5.5	6.2	2.34	0.16	0.68	29.18	13.30	1.91	0.07	2.34	17.63	4.93	22.56	19.01	78.13	100.32	3.7	3.4	12.32
2Btg5	102-121	6.6	5.9	6.1	1.78	0.13	0.33	24.73	11.20	1.67	0.06	1.62	14.55	3.09	17.65	16.46	82.46	96.49	3.0	2.9	9.86
2Btg6	121-140	6.7	6.1	6.3	0.71	0.09	0.16	25.63	9.23	1.45	0.07	1.26	12.00	1.84	13.84	13.50	86.71	98.89	4.1	3.2	9.34
2Btg7	140-162	6.8	6.2	6.4	0.35	0.06	0.16	24.05	7.45	1.33	0.06	0.97	9.81	1.21	11.02	11.77	89.05	95.51	5.9	3.9	8.28
2Btg8	162-190	6.9	6.2	6.2	0.17	0.05	0.16	22.87	6.15	1.20	0.06	0.99	8.39	0.91	9.31	14.09	90.21	71.34	5.5	3.6	7.04

Appendix Table C2 (Continued)

Soils samples	Depth	pH			OM	Total N	Avai.P	Avai.K	Exchangeable bases				Sum bases	EA	CEC		BS		EC	SAR	ESP
		H_2O	KCl	Sat.					Ca	Mg	K	Na			Sum	NH_4OAc	Sum	NH_4OAc	(sat.)		
	(cm)				(...g kg^{-1}…)		(…mg kg^{-1}...)		(…….…….…… cmol kg^{-1}…….....……)								(…..%.....)		dSm^{-1}		%
Pedon 10	Typic Natraqualf; fine, kaolinitic, isohyperthemic																				
Apg	0-16	5.1	4.4	5.8	15.64	0.70	7.29	50.38	6.48	1.46	0.13	0.67	8.74	8.60	17.35	13.69	50.40	84.92	9.0	3.9	4.89
Btg1	16-31	5.0	4.1	6.2	10.41	0.53	1.19	43.39	8.27	1.30	0.11	1.28	10.96	13.63	24.60	21.45	44.57	57.38	3.3	3.0	5.95
Btg2	31-52	4.9	3.9	6.2	7.94	0.40	0.85	45.25	9.57	1.17	0.12	1.50	12.35	11.56	23.91	19.43	51.66	68.95	3.6	3.4	7.73
Btg3	52-69	5.0	4.1	6.0	6.35	0.33	0.68	47.55	10.81	1.20	0.12	1.80	13.93	10.98	24.90	21.84	55.93	68.92	2.8	3.4	8.23
Btg4	69-95	5.3	4.6	6.1	6.54	0.32	1.03	39.44	11.48	1.25	0.10	2.09	14.92	9.36	24.28	21.64	61.45	75.17	3.5	4.0	9.67
2Btng1	95-128	5.9	5.3	6.1	3.25	0.15	0.68	36.42	9.64	1.19	0.09	2.47	13.40	6.24	19.64	16.98	68.24	87.11	2.9	3.8	14.58
2Btng2	128-161	6.6	5.6	6.2	1.09	0.13	0.51	31.52	11.41	1.54	0.08	3.04	16.08	3.76	19.83	18.27	81.05	98.18	3.0	4.3	16.63
2Btng3	161-187	6.8	5.8	6.3	0.90	0.10	0.16	33.30	13.21	1.71	0.09	3.82	18.82	3.12	21.94	21.55	85.77	97.96	3.8	5.5	17.72
2Btng4	187-210+	7.0	6.1	6.5	0.36	0.05	0.50	32.60	9.81	1.41	0.08	2.71	14.01	3.07	17.08	16.39	82.03	98.98	4.6	5.7	16.52
Location 3: Snady over clayey textures salt affected soils *(Kula Ronghai series)*																					
Pedon 11	Typic Natraqualf; fine, kaolinitic, isohyperthemic																				
Apg	0-15/23	5.2	3.6	7.1	6.54	0.33	9.89	12.01	0.76	0.09	0.03	0.04	0.92	5.67	6.58	2.16	13.92	45.66	0.4	1.8	1.76
Bcg	23-46	7.0	5.6	7.1	2.28	0.16	1.24	21.98	8.30	1.56	0.06	0.90	10.81	6.38	17.19	26.06	62.91	42.35	0.4	3.0	3.46
Btg1	46-65	7.6	6.1	7.2	1.05	0.11	0.42	21.13	10.71	1.75	0.05	1.74	14.26	5.81	20.07	12.25	71.06	122.11	2.9	4.2	14.23
Btg2	65-88	6.4	6.3	7.1	0.70	0.02	0.25	18.58	8.97	1.32	0.05	1.68	12.02	5.19	17.21	28.07	69.85	46.25	2.0	4.1	5.99
Btg3	88-113	7.4	6.4	6.9	0.52	0.07	0.08	14.46	8.35	1.04	0.04	1.46	10.89	4.85	15.74	26.54	69.20	45.58	2.6	4.7	5.50
2Btng1	113-140	6.9	6.3	6.8	0.70	0.03	0.08	13.00	3.81	0.76	0.03	1.20	5.79	4.52	10.31	7.18	56.17	100.30	3.4	5.3	16.65
2Btng2	140-172	6.7	5.9	6.8	0.52	0.10	0.25	13.20	3.39	0.70	0.03	0.97	5.09	4.21	9.30	6.52	54.72	100.64	3.6	5.1	14.81
2Btng3	172-205+	6.8	6.1	6.9	0.35	0.04	0.08	18.92	4.28	0.78	0.05	1.45	6.56	5.13	11.70	10.22	56.11	77.94	2.8	5.4	14.22
Pedon 12	Typic Natraqualf; fine, kaolinitic, isohyperthemic																				
Apg	0-19/20	4.9	3.7	6.3	7.22	0.35	6.04	4.01	0.26	0.02	0.01	0.01	0.30	4.77	5.07	5.06	5.90	7.40	0.3	2.0	0.12
Apng	20-27/32	6.1	4.2	6.4	1.72	0.08	1.36	1.58	0.21	0.01	0.00	0.16	0.39	3.57	3.96	0.65	9.80	64.60	0.4	3.1	24.96
Bcg	32-54/63	8.0	6.2	7.3	1.74	0.16	1.06	13.85	8.29	0.75	0.04	1.02	10.09	5.15	15.24	9.65	66.23	106.82	0.4	3.0	10.55
Btg1	63-82/87	7.4	6.0	7.4	0.70	0.09	0.59	18.81	11.25	1.17	0.05	1.63	14.10	5.19	19.29	26.50	73.10	55.08	0.6	4.9	6.17
Btg2	87-111/114	7.5	6.2	7.5	0.88	0.09	0.08	16.57	9.28	1.00	0.04	1.62	11.95	4.58	16.53	24.57	72.28	50.83	0.8	5.3	6.61
2Btg3	114-137	7.7	6.4	7.7	0.87	0.09	0.08	15.11	8.82	8.37	0.04	1.59	18.82	4.89	23.71	18.50	79.38	104.19	1.3	6.9	8.58
2Btg4	137-155	7.3	6.1	7.4	0.52	0.09	0.08	14.44	7.26	0.74	0.04	1.56	9.60	5.18	14.77	12.93	64.96	78.08	1.0	4.3	12.07
2Btng1	155-183	7.2	6.1	7.2	0.35	0.05	0.08	12.98	5.14	0.60	0.03	1.32	7.09	5.14	12.24	7.15	57.98	106.53	1.4	5.8	18.51
2Btng2	183-207+	7.0	6.5	7.2	0.70	0.07	0.08	14.84	5.09	0.60	0.04	1.44	7.16	5.13	12.30	7.14	58.25	108.83	1.4	4.0	20.19

Appendix Table C2 (Continued)

Soils samples	Depth	pH			OM	Total N	Avai.P	Avai.K	Exchangeable bases				Sum bases	EA	CEC		BS		EC (sat.)	SAR	ESP
		H_2O	KCl	Sat.					Ca	Mg	K	Na			Sum	NH_4OAc	Sum	NH_4OAc			
	(cm)				(...g kg^{-1}…)		(…mg kg^{-1}…)		(…… cmol kg^{-1}……)								(…….%.....)		dSm^{-1}		%
Pedon 13	Typic Endoaqualf; fine, kaolinitic, isohyperthemic																				
Apg1	0-18	4.7	3.6	6.0	6.02	0.26	12.46	9.87	0.28	0.04	0.03	0.00	0.36	8.38	8.73	1.70	4.07	26.73	0.5	0.8	0.15
Apg2	18-30	5.3	4.0	6.1	1.89	0.09	2.07	4.00	0.32	0.04	0.01	0.04	0.41	8.33	8.74	0.95	4.74	47.12	0.3	1.9	4.23
Btg1	30-48	5.7	4.0	6.3	3.51	0.11	0.75	20.70	7.36	1.57	0.05	0.85	9.83	10.03	19.86	17.26	49.51	58.34	0.2	1.7	4.90
Btg2	48-73	5.3	3.7	6.1	1.59	0.16	0.59	21.80	8.42	1.71	0.06	0.96	11.14	7.02	18.16	32.71	61.35	34.67	0.3	1.8	2.94
Btg3	73-91	5.5	4.1	6.3	0.87	0.10	0.41	18.37	6.90	1.28	0.05	0.62	8.84	8.49	17.33	25.53	50.99	35.32	0.3	1.7	2.42
2Btg4	91-118	5.3	4.2	6.2	0.70	0.05	0.24	15.76	6.39	1.04	0.04	0.35	7.82	8.19	16.01	18.16	48.85	44.54	0.4	1.5	1.91
2Btg5	118-150	6.1	4.5	6.3	0.35	0.07	0.25	14.70	8.35	0.97	0.04	0.67	10.03	6.97	17.00	12.20	59.00	83.44	0.4	1.2	5.52
2Btg6	150-185	5.8	4.3	6.4	0.35	0.05	0.25	21.20	9.14	1.19	0.05	0.41	10.80	7.90	18.70	31.94	57.76	34.84	0.2	1.4	1.29
2Btg7	185-210+	5.7	4.6	6.5	0.35	0.09	0.26	19.74	9.29	1.11	0.05	0.37	10.82	7.88	18.69	29.53	57.86	37.04	0.2	1.2	1.25
Pedon 14	Typic Natraqualf; fine-loamy, mixed,active, isohyperthemic																				
Apg	0-28	5.2	3.7	5.3	9.97	0.41	16.09	19.32	3.94	0.05	0.05	0.00	4.04	5.96	10.00	1.70	40.40	247.46	0.7	2.0	0.09
Bng	28-44	6.4	4.5	5.7	2.06	0.12	29.33	8.34	3.58	0.06	0.02	0.29	3.95	4.16	8.11	1.25	48.66	324.37	0.8	3.5	23.10
Bcg	44-66	6.4	6.1	6.7	1.41	0.12	0.74	22.38	12.04	1.84	0.06	2.72	16.66	7.03	23.69	22.36	70.31	77.25	0.7	5.6	12.16
Btng1	66-85	6.6	6.5	6.9	0.88	0.07	0.41	23.13	11.29	1.41	0.06	2.24	15.00	6.11	21.11	13.83	71.06	112.71	1.0	4.5	16.17
Btng2	85-110	7.3	6.4	6.9	0.70	0.07	0.41	24.44	8.69	1.28	0.06	2.28	12.31	5.46	17.78	17.24	69.26	75.82	1.2	6.6	13.20
Btng3	110-137	6.9	6.3	6.9	0.70	0.03	0.41	24.19	10.47	1.19	0.06	2.28	14.01	4.86	18.87	10.06	74.24	148.02	1.5	6.3	22.67
2Btng4	137-161	7.3	6.3	6.9	0.70	0.03	0.41	20.27	6.28	0.77	0.05	1.58	8.69	5.15	13.84	9.13	62.80	105.93	2.1	5.0	17.35
2Btng5	161-183	7.1	6.2	7.0	0.52	0.03	0.41	18.70	6.56	0.82	0.05	1.53	8.96	5.78	14.74	6.99	60.80	141.54	1.7	5.1	21.90
2Btg	183-206+	7.2	5.9	7.0	0.35	0.02	0.75	21.27	6.32	0.77	0.05	1.15	8.29	5.43	13.73	15.41	60.42	60.99	1.9	5.2	7.46
Pedon 15	Typic Natraqualf; fine, kaolinitic, isohyperthemic																				
Apg	0-15	4.9	3.7	6.4	6.53	0.27	6.21	8.94	2.52	0.05	0.02	0.14	2.73	5.68	8.41	1.65	32.47	172.61	0.5	2.4	8.20
Bcg	15-50	7.2	6.3	7.1	1.58	0.09	1.07	20.60	9.35	1.87	0.05	1.94	13.22	6.69	19.91	20.10	66.38	68.45	0.7	6.0	9.67
Btg1	50-70	7.5	6.3	6.8	1.23	0.03	0.73	21.30	9.83	1.79	0.05	2.14	13.82	6.37	20.19	29.47	68.45	49.18	0.9	5.8	7.27
Btg2	70-90	7.6	6.3	7.0	1.05	0.05	0.41	20.35	8.78	1.60	0.05	1.85	12.28	5.78	18.06	18.29	67.99	70.88	1.1	4.8	10.11
Btg3	90-110	7.4	6.1	7.0	0.87	0.07	0.42	19.76	9.68	1.38	0.05	1.80	12.91	5.76	18.66	27.83	69.15	48.89	1.2	4.5	6.45
2Btg4	110-130	7.4	6.4	7.0	1.04	0.03	0.41	16.08	9.27	1.16	0.04	1.38	11.86	5.44	17.29	10.02	68.56	126.03	1.5	4.1	13.78
2Btng1	130-153	7.5	4.4	7.0	1.04	0.03	0.41	16.74	7.01	0.96	0.04	1.52	9.52	5.45	14.97	9.83	63.60	104.73	1.7	5.0	15.45
2Btg5	153-182	7.4	6.4	6.9	1.04	0.05	0.41	18.24	6.53	0.93	0.05	1.43	8.94	5.74	14.68	15.06	60.89	65.32	2.5	6.4	9.50
2Btng2	182-200	7.3	6.3	7.0	0.87	0.03	0.41	19.67	7.90	0.88	0.05	1.32	10.15	5.77	15.93	7.49	63.74	150.30	2.4	5.9	17.63

Appendix Table C2 (Continued)

Soils samples	Depth	pH			OM	Total N	Avai.P	Avai.K	Exchangeable bases				Sum bases	EA	CEC		BS		EC (sat.)	SAR	ESP
		H_2O	KCl	Sat.					Ca	Mg	K	Na			Sum	NH_4OAc	Sum	NH_4OAc			
	(cm)				(...g kg^{-1}..)		(…mg kg^{-1}…)		(…… cmol kg^{-1}……..)						(…….%.....)				dSm^{-1}		%
Pedon 16	Typic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic																				
Apg1	0-16/18	5.2	3.7	5.4	9.62	0.36	3.04	4.84	0.38	0.02	0.01	0.02	0.44	6.90	7.34	1.70	6.01	30.34	0.3	0.8	1.23
Apg2	18-21/28	5.7	4.4	6.1	2.41	0.10	1.39	2.42	0.23	0.03	0.01	0.06	0.32	4.78	5.10	0.85	6.24	40.76	0.3	1.9	6.52
Bcng	28-47/57	7.4	5.2	7.2	3.32	0.19	0.74	14.97	10.19	1.28	0.04	1.54	13.05	6.71	19.76	10.49	66.05	127.78	0.7	7.2	14.72
Btng1	57-72	7.6	5.6	7.2	1.22	0.05	0.41	16.33	12.09	1.41	0.04	2.48	16.02	5.78	21.80	11.67	73.50	140.85	1.0	8.1	21.29
Btng2	72-94	7.8	5.8	7.1	0.35	0.03	0.41	14.38	9.89	1.17	0.04	2.15	13.25	5.79	19.04	13.04	69.57	105.90	0.9	4.7	16.45
Btng3	94-113	8.0	5.8	7.1	0.35	0.04	0.40	12.43	8.33	0.93	0.03	1.81	11.11	5.76	16.86	8.67	65.86	134.70	1.3	5.6	20.86
2Btng4	113-138	7.9	5.7	7.0	0.35	0.02	0.40	10.63	7.80	0.79	0.03	1.69	10.31	5.76	16.07	7.22	64.14	150.81	1.3	5.7	23.44
2Btg	138-169	7.8	5.7	6.9	0.35	0.03	0.40	10.49	7.74	0.73	0.03	1.87	10.37	6.04	16.41	13.55	63.19	81.51	1.8	4.8	13.80
2Btng5	169-202+	7.7	5.8	6.8	0.35	0.02	0.41	11.40	7.48	0.60	0.03	1.49	9.61	5.41	15.01	9.23	63.99	112.45	2.0	5.3	16.17
Location 4 Clayey textured salt affected soils *(Udon series)*																					
Pedon 17	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic																				
Ang	0-20	6.4	5.5	7.3	16.49	0.36	8.73	312.45	22.50	4.08	0.80	6.37	33.75	15.65	49.40	30.27	68.32	151.90	17.8	8.1	21.04
ABng	20-36	5.9	5.1	7.0	9.32	0.38	5.33	177.31	14.79	2.63	0.45	7.48	25.35	15.68	41.02	21.56	61.79	153.69	13.9	10.4	34.71
Btng1	36-60	4.6	3.8	5.8	7.18	0.32	1.10	62.39	9.04	2.45	0.16	3.13	14.78	15.68	30.47	15.27	48.53	166.52	25.5	8.4	20.51
Btng2	60-85	4.3	3.6	5.9	4.32	0.24	1.11	58.50	13.59	2.48	0.15	4.69	20.92	16.28	37.20	25.61	56.23	119.29	23.0	8.4	18.32
Btng3	85-110	4.4	3.6	5.5	3.91	0.20	0.75	50.12	11.46	2.33	0.13	3.53	17.45	15.60	33.06	16.94	52.80	159.56	19.4	7.9	20.86
Btng4	110-130	4.2	3.5	5.6	3.57	0.18	0.76	45.16	12.36	2.69	0.12	2.79	17.95	16.27	34.22	16.61	52.46	172.02	20.0	7.7	16.78
Bssg1	130-165	4.2	3.4	5.9	3.28	0.17	1.13	94.44	23.65	3.98	0.24	5.17	33.05	19.54	52.59	27.11	62.84	167.75	16.8	6.9	19.09
Bssg2	165-200+	4.3	3.5	5.9	2.39	0.24	1.48	121.00	27.42	5.58	0.31	6.42	39.73	20.75	60.49	34.69	65.69	142.19	11.7	7.5	18.52
Pedon 18	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic																				
Ang	0-19	4.8	4.3	6.2	15.58	0.39	3.84	237.62	16.77	4.27	0.61	5.99	27.63	17.26	44.90	24.76	61.55	132.44	9.3	7.2	24.19
Btng1	19-43	5.0	4.3	6.1	7.38	0.30	1.45	89.61	12.83	3.15	0.23	4.38	20.60	16.48	37.08	18.21	55.55	144.87	12.7	8.4	24.08
Btng2	43-64	4.9	4.2	6.1	5.23	0.25	1.11	65.27	14.43	2.47	0.17	4.85	21.92	15.63	37.55	17.62	58.36	165.41	13.4	7.9	27.52
Btng3	64-94	4.8	4.3	6.0	4.49	0.16	0.76	46.39	11.79	2.62	0.12	3.77	18.30	14.91	33.21	16.83	55.11	154.53	17.1	8.0	22.42
Btng4	94-113	4.7	4.0	6.0	2.86	0.11	0.76	37.47	12.99	2.64	0.10	3.16	18.88	14.85	33.73	16.12	55.97	165.26	17.7	7.3	19.61
Btgn5	113-140	4.8	3.9	6.0	1.78	0.05	0.75	33.79	11.87	2.46	0.09	2.27	16.68	13.50	30.18	15.40	55.28	156.21	15.0	6.4	14.75
2Btg	140-169	4.4	4.1	6.1	0.88	0.03	0.74	25.12	9.63	1.81	0.06	1.44	12.95	10.93	23.89	10.73	54.23	174.27	18.4	6.8	13.42
2Btng6	169-195+	4.3	4.2	6.1	0.90	0.07	0.42	36.55	17.58	2.64	0.09	6.33	26.65	13.75	40.39	19.49	65.97	152.85	13.5	6.8	32.48

Appendix Table C2 (Continued)

Soils samples	Depth	pH			OM	Total N	Avai.P	Avai.K	Exchangeable bases				Sum bases	EA	CEC		BS		EC (sat.)	SAR	ESP
		H_2O	KCl	Sat.					Ca	Mg	K	Na			Sum	NH_4OAc	Sum	NH_4OAc			
	(cm)				(...g kg^{-1}…)		(…mg kg^{-1}…)		(…… cmol kg^{-1}……)						(…….%.....)				dSm^{-1}		%
Pedon 19	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic																				
Ang	0-19	5.5	4.5	7.0	11.67	0.44	2.36	151.55	14.88	3.00	0.39	4.44	22.71	15.76	38.47	23.06	59.04	125.20	7.8	9.0	19.24
Btng1	19-38	5.0	4.3	6.2	7.67	0.30	0.77	75.87	11.08	2.25	0.19	3.87	17.39	16.08	33.47	16.24	51.95	137.58	11.7	9.0	23.80
Btng2	38-56	4.7	3.9	6.4	6.27	0.26	0.44	72.07	16.98	2.55	0.18	4.28	23.99	17.03	41.02	24.30	58.48	121.38	11.6	8.3	17.60
Btng3	56-77	4.9	4.0	6.3	3.78	0.19	0.44	40.09	12.45	2.27	0.10	4.22	19.06	14.67	33.72	19.07	56.51	236.46	11.8	7.9	22.15
2Btng4	77-100	5.2	4.4	6.1	1.94	0.10	0.43	23.66	8.17	1.52	0.06	2.77	12.52	10.92	23.44	10.59	53.43	159.66	13.4	7.7	26.19
2Btng5	100-119	5.9	5.2	6.0	1.39	0.05	0.76	16.98	5.65	0.83	0.04	1.43	7.96	7.48	15.44	4.38	51.57	263.64	22.1	7.7	32.68
2Btng6	119-146	5.8	5.5	6.2	1.21	0.03	1.09	7.82	1.98	0.57	0.02	0.89	3.46	8.35	11.82	2.60	29.30	262.22	22.6	7.4	34.18
2Btng7	146-175	6.0	5.7	6.5	1.05	0.05	1.43	18.95	5.80	1.06	0.05	2.01	8.92	8.13	17.05	5.91	52.29	216.73	18.6	9.3	33.96
2Btng8	175-210+	6.0	5.5	6.0	0.70	0.03	6.67	26.86	10.32	1.42	0.07	2.04	13.85	9.13	22.97	8.03	60.27	229.43	42.1	9.1	25.43
Pedon 20	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic																				
Ang	0-20	5.8	4.7	6.3	13.87	0.53	3.57	191.34	20.76	3.30	0.49	5.63	30.18	16.82	47.01	22.79	64.21	152.04	12.2	8.4	24.71
Btng1	20-44	5.1	4.1	6.1	6.48	0.27	0.78	81.33	13.55	2.18	0.21	5.15	21.09	17.34	38.43	20.07	54.88	127.86	11.6	8.8	25.67
Btng2	44-66	4.9	3.9	6.1	4.14	0.14	1.49	60.45	15.28	2.65	0.15	4.03	22.11	16.20	38.31	19.75	57.71	141.31	10.6	7.4	20.40
Btng3	66-89	4.8	3.9	5.9	3.04	0.11	0.44	48.73	15.26	2.66	0.12	4.60	22.65	16.06	38.70	18.47	58.52	155.36	14.3	8.2	24.92
Btng4	89-113	4.6	3.9	6.0	3.04	0.12	0.27	42.89	18.69	2.42	0.11	4.00	25.22	15.12	40.34	18.47	62.51	171.65	14.1	7.4	21.64
Btng5	113-139	4.9	4.1	6.0	2.30	0.03	0.10	40.43	17.18	2.22	0.10	2.69	22.19	13.59	35.78	15.18	62.01	188.31	15.4	6.9	17.70
Btng6	139-171	4.8	4.0	6.0	1.63	0.07	0.10	53.45	22.73	3.86	0.14	4.75	31.48	15.09	46.57	24.65	67.59	160.42	16.1	7.0	19.25
Btng7	171-200+	5.0	4.2	6.1	1.87	0.15	0.46	117.28	30.74	5.69	0.30	7.27	44.01	18.58	62.59	38.94	70.31	145.21	17.0	8.0	18.68
Pedon 21	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic																				
Ang	0-18	5.4	4.6	6.1	15.38	0.52	6.55	255.61	20.23	3.65	0.66	5.10	29.64	19.17	48.80	27.87	60.73	128.38	12.6	7.2	18.30
Btng1	18-45	4.8	3.8	5.8	10.59	0.38	1.47	104.43	21.92	2.69	0.27	4.98	29.85	20.12	49.97	24.99	59.74	140.68	14.2	8.4	19.91
Btng2	45-68	4.3	3.2	4.8	6.55	0.31	0.80	59.31	16.96	3.24	0.15	3.25	23.61	19.82	43.43	21.11	54.36	149.79	18.4	7.8	15.41
Btng3	68-89	4.2	3.3	4.8	5.33	0.20	1.14	41.48	15.94	3.04	0.11	3.49	22.57	19.24	41.81	20.95	53.99	153.34	20.0	7.2	16.66
Btng4	89-112	4.2	3.4	4.7	3.67	0.18	0.79	39.95	15.88	3.43	0.10	4.96	24.36	18.54	42.90	21.01	56.79	165.30	17.9	6.3	23.59
Btng5	112-137	4.1	3.4	4.8	3.14	0.20	1.15	59.13	26.18	5.06	0.15	6.27	37.65	19.50	57.16	26.42	65.88	188.46	21.0	6.3	23.72
Btng6	137-161	4.1	3.5	5.2	3.03	0.24	0.84	74.05	28.65	5.37	0.19	8.44	42.65	21.84	64.49	33.62	66.14	162.46	17.2	6.3	25.11
Btng7	161-200+	4.4	3.6	5.4	2.68	0.23	0.47	99.78	31.74	6.11	0.26	10.89	49.00	22.83	71.83	41.79	68.21	144.53	13.9	7.0	26.06

Appendix Table C2 (Continued)

Soils samples	Depth	pH			OM	Total N	Avai.P	Avai.K	Exchangeable bases				Sum bases	EA	CEC		BS		EC (sat.)	SAR	ESP
		H_2O	KCl	Sat.					Ca	Mg	K	Na			Sum	NH_4OAc	Sum	NH_4OAc			
	(cm)				(...g kg^{-1}…)		(…mg kg^{-1}…)		(…… cmol kg^{-1}……)						(…….%.....)				dSm^{-1}		%
Pedon 22	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic																				
Ang	0-21	4.8	4.3	6.1	14.40	0.65	6.09	181.97	21.12	2.83	0.47	5.29	29.70	16.59	46.29	21.88	64.16	172.03	24.0	8.2	24.18
Btng1	21-41	4.8	3.9	5.3	8.45	0.33	1.15	63.53	24.59	2.22	0.16	5.57	32.54	16.85	49.39	19.09	65.89	202.27	17.7	7.4	29.19
Btng2	41-66	4.5	3.8	5.4	5.77	0.26	0.78	50.28	19.61	2.76	0.13	5.59	28.09	16.17	44.26	20.67	63.47	177.33	18.8	6.7	27.06
Btng3	66-88	4.6	4.2	5.6	3.28	0.20	0.80	63.30	27.97	4.19	0.16	7.40	39.72	16.96	56.68	27.46	70.09	190.21	24.3	7.1	26.95
Btng4	88-108	4.9	4.2	5.7	3.35	0.20	0.81	67.78	32.31	5.47	0.17	8.11	46.06	18.02	64.08	34.58	71.88	175.18	22.0	6.6	23.45
Btng5	108-132	5.1	4.7	6.0	2.63	0.18	0.83	97.01	33.58	6.73	0.25	9.58	50.15	18.35	68.51	38.36	73.21	171.73	19.2	6.6	24.98
Btng6	132-165	5.3	4.8	6.2	2.66	0.30	1.02	119.82	35.45	7.35	0.31	12.20	55.31	20.25	75.56	42.98	73.20	163.56	16.8	6.9	28.39
Btng7	165-184	5.1	4.9	6.2	2.07	0.41	1.37	133.03	36.43	6.41	0.34	12.55	55.73	19.52	75.25	41.85	74.06	156.56	12.1	6.4	29.98
Btng8	184-202+	5.4	5.0	6.8	2.25	0.39	1.34	141.11	35.11	6.35	0.36	12.66	54.48	19.35	73.83	42.87	73.79	147.67	7.9	5.7	29.53
Location 5 Sandy textured salt affected soils *(Roi Et, saline variant 2)*																					
Pedon 23	Typic Natraqualf; sandy, silicious, subactive, isohyperthemic																				
Apng	0-11	8.3	8.1	7.5	2.58	0.05	1.27	20.75	0.29	0.15	0.05	0.83	1.32	6.31	7.64	0.90	17.33	825.97	37.7	45.2	91.91
Bng1	11-30	8.1	7.5	7.4	0.69	0.02	1.07	5.74	0.11	0.08	0.01	0.47	0.68	6.84	7.52	0.45	9.00	404.49	7.5	16.8	105.40
Bng2	30-47	7.7	7.3	7.3	0.34	0.01	1.10	6.52	0.13	0.08	0.02	0.26	0.49	7.76	8.26	0.40	5.95	547.25	11.3	19.2	65.04
Btng1	47-69	8.0	7.5	7.6	0.34	0.02	1.75	11.92	0.12	0.13	0.03	0.17	0.46	7.21	7.66	0.50	5.98	389.77	9.6	19.6	34.98
Btng2	69-95	8.5	7.2	7.5	0.52	0.05	1.76	49.10	0.99	0.60	0.13	2.05	3.76	7.25	11.02	3.19	34.16	188.68	9.7	22.0	64.09
Btng3	95-110	8.4	7.0	7.4	0.17	0.02	1.76	59.20	0.90	0.87	0.15	3.29	5.22	6.94	12.15	5.38	42.92	147.98	15.0	25.6	61.12
Btng4	110-130	8.3	7.1	7.3	0.17	0.02	1.79	59.90	1.33	0.84	0.15	3.01	5.33	6.97	12.30	5.16	43.36	165.89	12.1	20.5	58.25
Btng5	130-153	8.1	7.1	7.3	0.35	0.01	1.08	59.71	1.40	0.87	0.15	2.61	5.03	8.16	13.19	6.51	38.13	121.69	8.7	18.5	40.14
2Btng6	153-178	8.1	6.9	7.3	0.18	0.02	1.44	100.41	1.98	1.24	0.26	4.36	7.84	7.58	15.42	8.50	50.84	124.70	10.1	16.6	51.31
2Btng7	178-200+	7.8	6.8	7.4	0.18	0.02	33.82	146.94	2.40	1.48	0.38	4.98	9.24	7.68	16.92	10.39	54.61	118.82	9.0	21.8	47.89
Pedon 24	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																				
Apng	0-12	6.3	6.1	7.0	4.33	0.11	3.79	12.94	1.91	0.56	0.03	0.82	3.32	7.50	10.82	2.32	30.72	357.35	29.5	10.0	35.33
Btng1	12-30	7.1	7.0	7.6	0.87	0.09	1.43	15.67	1.91	0.64	0.04	1.55	4.14	8.16	12.31	4.34	33.66	150.91	9.3	12.3	35.84
Btng2	30-53	7.2	6.4	7.4	0.35	0.02	1.11	17.99	1.59	0.70	0.05	1.82	4.16	8.15	12.30	3.99	33.78	165.58	9.7	14.8	45.69
Btng3	53-73	7.5	6.7	7.1	0.17	0.02	1.08	24.34	1.52	0.75	0.06	2.81	5.14	8.41	13.56	4.75	37.92	157.74	10.4	15.7	59.06
Btng4	73-100	7.5	6.5	7.3	0.70	0.01	1.11	57.34	1.95	1.10	0.15	3.59	6.80	8.21	15.00	7.44	45.30	123.01	4.2	9.2	48.32
Btng5	100-128	7.7	6.6	7.1	0.70	0.01	2.12	66.79	1.94	1.14	0.17	3.79	7.04	7.91	14.95	7.49	47.12	126.71	4.8	9.6	50.55
2Btng6	128-155	7.6	6.6	7.3	0.18	0.01	15.82	90.54	2.12	1.42	0.23	4.77	8.55	7.62	16.16	8.82	52.88	128.40	7.8	17.5	54.09
2Crtng	155-200+	8.6	7.0	7.8	0.18	0.04	2.12	170.08	28.15	2.15	0.44	6.06	36.79	9.50	46.29	22.28	79.47	180.26	9.0	20.3	27.19

Appendix Table C2 (Continued)

Soils samples	Depth	pH			OM	Total N	Avai.P	Avai.K	Exchangeable bases				Sum bases	EA	CEC		BS		EC (sat.)	SAR	ESP
		H_2O	KCl	Sat.					Ca	Mg	K	Na			Sum	NH_4OAc	Sum	NH_4OAc			
	(cm)				(...g kg^{-1}…)		(…mg kg^{-1}…)		(…… cmol kg^{-1} ……)								(……%.....)		dSm^{-1}		%
Pedon 25	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																				
Apg	0-17/30	5.3	3.1	5.1	9.64	0.19	4.67	9.74	0.93	0.10	0.02	0.01	1.06	9.28	10.34	2.15	10.28	55.02	0.4	0.8	0.24
Bg	17-30	5.8	3.9	6.3	3.10	0.06	2.06	4.85	0.51	1.17	0.01	0.06	1.76	8.05	9.81	1.40	17.90	127.43	0.3	1.2	4.50
Btng1	30-52	6.2	4.5	6.5	1.74	0.08	1.43	11.52	2.42	1.30	0.03	0.73	4.48	8.14	12.61	4.55	35.51	103.04	0.7	3.5	16.02
Btng2	52-71	7.0	5.3	7.7	0.70	0.07	1.43	19.20	3.35	2.13	0.05	1.76	7.29	10.06	17.33	7.45	42.05	103.66	1.1	2.9	23.60
Btng3	71-92	7.5	6.0	7.5	0.70	0.04	27.66	32.75	3.13	1.76	0.08	2.16	7.14	9.44	16.58	6.83	43.05	113.79	1.9	6.1	31.54
2BCrng1	92-120	8.8	7.1	8.3	0.18	0.05	15.59	103.82	21.32	2.17	0.27	2.52	26.28	9.49	35.76	12.44	73.48	224.96	3.0	9.8	20.27
2BCrng2	120-143	8.5	7.6	8.2	0.18	0.07	106.00	186.95	19.07	2.62	0.48	2.81	24.98	9.91	34.89	18.64	71.61	147.41	5.1	11.7	15.09
2BCrg	143-170	8.1	7.0	7.9	0.18	0.07	150.82	253.50	8.46	6.11	0.65	3.17	18.39	8.66	27.05	35.32	67.98	61.47	5.5	10.9	8.97
2BCrng3	170-200	7.9	6.7	7.9	0.18	0.07	330.50	299.76	6.87	4.08	0.77	3.25	14.96	8.33	23.30	18.00	64.23	102.58	5.4	11.1	18.05
Pedon 26	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																				
Apg	0-14	5.1	4.3	3.9	4.47	0.12	3.85	7.51	0.48	0.11	0.02	0.15	0.76	7.13	7.88	1.25	9.58	88.96	3.9	3.1	12.07
Bng	14-31/46	5.7	4.3	5.6	0.69	0.03	1.40	3.10	0.49	0.06	0.01	0.19	0.76	8.08	8.84	0.85	8.62	112.01	1.9	5.0	22.90
Btng1	46-53	5.1	3.9	6.4	1.21	0.09	1.75	11.06	0.62	0.42	0.03	1.13	2.21	9.88	12.09	3.33	18.27	91.67	4.5	10.0	34.10
Btng2	53-73	5.0	3.8	6.3	2.09	0.09	2.09	22.97	1.32	0.85	0.06	1.86	4.09	10.89	14.99	5.18	27.30	111.90	5.1	11.3	35.94
Btng3	73-92	5.1	4.1	6.3	1.05	0.04	1.44	26.38	1.36	1.06	0.07	1.81	4.30	9.99	14.28	5.19	30.07	122.91	5.7	11.4	34.88
2Btng4	92-114	6.3	5.5	6.6	0.88	0.04	1.12	58.92	2.24	1.69	0.15	3.11	7.19	9.80	16.99	9.17	42.33	100.70	4.4	11.3	33.94
2Btng5	114-137	6.9	5.8	6.9	0.18	0.04	1.45	70.02	2.30	1.82	0.18	3.19	7.48	8.83	16.31	7.76	45.86	122.90	7.1	12.9	41.05
2Btng6	137-164	7.1	6.0	6.8	0.18	0.06	2.43	96.68	2.77	2.23	0.25	3.90	9.15	9.43	18.59	9.77	49.24	120.61	5.6	11.4	39.92
2BCrng	164-200+	7.1	6.1	6.8	0.18	0.06	46.56	124.44	3.42	2.51	0.32	4.18	10.43	9.87	20.30	13.56	51.37	102.23	6.6	12.1	30.85
Pedon 27	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																				
Apng	0-20/22	5.6	4.0	6.0	4.81	0.14	4.06	4.88	0.49	0.03	0.01	0.27	0.80	9.55	10.35	1.10	7.76	83.02	0.3	13.5	24.50
Bg	22-40	6.6	4.7	6.5	0.69	0.03	0.97	1.47	0.22	0.01	0.00	0.03	0.26	7.42	7.68	0.30	3.39	109.18	0.3	17.7	8.43
Bng	40-58	6.8	5.8	6.9	0.52	0.05	0.99	2.51	0.38	0.01	0.01	0.12	0.52	7.75	8.27	0.35	6.30	168.37	0.7	21.1	35.71
Btng1	58-82	6.8	5.7	6.9	0.87	0.02	0.84	12.40	2.69	0.75	0.03	1.33	4.81	8.81	13.62	5.02	35.30	105.55	1.4	5.1	26.52
Btng2	82-104	6.9	5.8	6.8	0.17	0.11	0.66	13.53	2.68	0.76	0.03	1.58	5.05	8.46	13.52	4.87	37.38	118.36	2.5	7.0	32.49
Btng3	104-122	6.2	4.9	6.7	0.18	0.05	0.43	28.09	3.51	1.08	0.07	2.43	7.09	10.05	17.14	7.44	41.38	110.59	2.3	7.4	32.69
Btng4	122-143	6.2	5.0	6.7	0.18	0.05	0.32	38.06	3.67	1.15	0.10	2.74	7.66	10.03	17.69	7.85	43.29	115.76	2.4	6.9	34.92
Btng5	143-160	6.5	5.4	6.6	0.18	0.04	0.33	45.58	3.44	1.12	0.12	2.60	7.28	9.79	17.07	9.02	42.65	97.79	2.9	8.9	28.87
2Btng6	160-180	6.7	5.7	6.6	0.17	0.03	0.49	48.12	2.94	0.93	0.12	2.63	6.61	8.81	15.42	6.42	42.89	128.82	4.8	9.8	40.88
2Btng7	180-202+	6.8	5.9	6.6	0.18	0.04	0.33	60.64	3.32	1.12	0.16	2.52	7.12	8.82	15.94	7.57	44.65	118.87	5.0	10.8	33.27

Appendix Table C2 (Continued)

Soils samples	Depth	pH			OM	Total N	Avai.P	Avai.K	Exchangeable bases				Sum bases	EA	CEC		BS		EC (sat.)	SAR	ESP
		H_2O	KCl	Sat.					Ca	Mg	K	Na			Sum	NH_4OAc	Sum	NH_4OAc			
	(cm)				(...g kg^{-1}…)		(…mg kg^{-1}…)		(…… cmol kg^{-1}……..…..……)								(…….%.....)		dSm^{-1}		%
Pedon 28 Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																					
Apng	0-10/13	4.7	4.2	5.0	3.78	0.13	6.01	3.88	0.42	0.03	0.01	0.30	0.76	8.05	8.81	0.70	8.63	219.71	5.6	7.9	43.16
Bng	13-30	5.4	4.8	5.6	1.03	0.05	1.98	1.84	0.22	0.03	0.00	0.15	0.39	8.07	8.46	0.45	4.64	160.81	3.3	5.3	32.59
Btng1	30-44	5.7	4.7	6.3	0.52	0.09	0.49	11.28	1.43	0.44	0.03	1.02	2.91	9.04	11.96	3.22	24.37	135.71	6.2	9.2	31.69
Btng2	44-66	6.4	5.6	6.7	0.17	0.04	0.65	15.04	1.58	0.63	0.04	1.33	3.57	8.99	12.56	3.38	28.46	164.22	9.4	10.8	39.33
Btng3	66-86	6.7	5.9	6.7	0.17	0.03	2.71	21.74	1.70	0.71	0.06	1.62	4.09	8.79	12.88	3.68	31.76	168.63	9.5	11.3	44.18
Btng4	86-107	6.8	6.1	6.8	0.18	0.03	2.45	32.35	2.03	0.92	0.08	1.88	4.91	8.82	13.73	5.09	35.76	149.42	11.5	12.4	36.92
Btng5	107-138/144	6.8	6.2	6.9	0.17	0.03	0.32	47.20	2.14	1.12	0.12	2.37	5.75	8.15	13.90	6.50	41.37	130.35	13.2	14.9	36.53
2Btng6	144-168	6.9	6.2	6.9	0.18	0.05	0.16	69.92	3.24	1.54	0.18	3.41	8.37	8.82	17.19	8.73	48.68	128.83	11.2	15.4	39.05
2Btng7	168-200	7.1	6.2	6.8	0.18	0.10	0.16	138.63	4.76	2.64	0.36	6.60	14.36	9.95	24.30	38.00	59.07	49.40	6.8	12.5	17.37

Appendix Table C3 Soluble salt in Salt Affected Soils.

Horizon	Depth	Soluble Na	Soluble K	Soluble Ca	Soluble Mg
	cm	(……..….cmol(+) kg-1……..…..……)			
Location 1 : Sandy textured salt affected soils *(Roi Et, saline variant)*					
Pedon 1 Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic					
Apng	0 -12	21.536	0.039	0.242	0.170
Bng	12-37	1.672	0.093	0.000	0.005
Btng1	37-60	1.748	0.075	0.000	0.004
Btng2	60-76	2.668	0.175	0.000	0.008
Btng3	76-100	3.035	0.173	0.000	0.008
Btng4	100-128	2.995	0.064	0.000	0.004
Btng5	128-140	2.922	0.036	0.000	0.002
2Btng6	140-170	2.891	0.056	0.000	0.004
2Btng7	170-190+	3.203	0.036	0.000	0.003
Pedon 2 Typic Natraqualf; coarse-loamy, mixed, semiactive isohyperthemic					
Apng	0-20	0.429	0.013	0.000	0.001
Btng1	20-34	1.063	0.062	0.000	0.006
Btng2	34-55	1.778	0.142	0.000	0.014
Btng3	55-80	2.501	0.172	0.000	0.015
Btng4	80-109	1.870	0.154	0.000	0.009
Btng5	109-130	2.226	0.189	0.000	0.009
Btcng	130-142	2.046	0.143	0.000	0.008
2Btng6	142-175	2.440	0.263	0.000	0.014
2Btng7	175-200	2.449	0.257	0.000	0.012
Pedon 3 Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic					
Apg	0-12	3.475	0.045	0.378	0.021
Btg1	12-20/25	1.790	0.010	0.082	0.059
Btng	25-48/52	0.632	0.003	0.008	0.003
Btg2	52-80/85	0.490	0.003	0.006	0.003
Btg3	85-110	0.909	0.006	0.022	0.012
Btg4	110-130	1.169	0.008	0.042	0.025
Btg5	130-153	0.853	0.006	0.038	0.021
2Btg6	153-180	0.696	0.004	0.013	0.007
2Btg7	180-205+	0.459	0.004	0.003	0.002
Pedon 4 Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic					
Apng	0-20	3.599	0.017	0.018	0.016
Btng1	20-48	1.893	0.004	0.023	0.013
Btg1	48-70	1.768	0.004	0.029	0.013
Btg2	70-95	2.111	0.005	0.022	0.011
Btng2	95-130	1.679	0.003	0.010	0.005
Btng3	130-148/150	2.042	0.137	0.000	0.012
2Btng4	150-180	2.073	0.150	0.000	0.014
2Btng5	180-200+	2.084	0.158	0.000	0.014
Pedon 5 Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic					
Apng	0-20	0.952	0.012	0.017	0.011
Btg1	20-40	0.981	0.006	0.049	0.024
Btg2	40-70	0.994	0.006	0.026	0.014
Btg3	70-90	1.229	0.005	0.035	0.018
Btg4	90-112	1.189	0.006	0.046	0.024
Btg5	112-140	0.967	0.006	0.045	0.021
Btg6	140-170	0.818	0.006	0.032	0.015
Btg7	170-193	0.773	0.006	0.030	0.012

Appendix Table C3 (Continued)

Horizon	Depth	Soluble Na	Soluble K	Soluble Ca	Soluble Mg
	cm	(……..cmol(+) kg-1……..……)			
Location 2 : Clayey textured salt affected soils *(Phimai series)*					
Pedon 6 Typic Natraqualf; fine, kaolinitic, isohyperthemic					
Apng1	0-10	8.707	0.021	2.536	0.552
Apng2	10-20	5.205	0.007	0.278	0.056
Btng1	20-33	4.177	0.004	0.228	0.040
Btng2	33-48	3.336	0.002	0.061	0.024
Btng3	48-70	3.785	0.002	0.040	0.015
Btng4	70-88	3.696	0.002	0.016	0.007
2Btng5	88-114	3.003	0.003	0.022	0.009
2Btng6	114-135	3.591	0.007	0.042	0.017
2Btng7	135-156	2.951	0.006	0.039	0.016
2Btng8	156-190	3.369	0.007	0.070	0.027
Pedon 7 Typic Natraqualf; very fine, kaolinitic, isohyperthemic					
Apg1	0-18	2.857	0.017	0.462	0.113
Apg2	18-30	3.287	0.006	0.301	0.060
Btg	30-42	3.187	0.006	0.267	0.042
Btng1	42-53/64	3.745	0.004	0.089	0.033
Btng2	64-79	3.754	0.004	0.067	0.025
Btng3	79-100	2.950	0.003	0.070	0.024
Btng4	100-124	3.954	0.003	0.069	0.022
Btng5	124-151	3.926	0.002	0.059	0.021
2Btng6	151-176	3.196	0.003	0.040	0.016
2Btng7	176-200	3.316	0.004	0.068	0.025
Pedon 8 Typic Natraqualf; fine, kaolinitic, isohyperthemic					
Apg	0-11	3.564	0.027	0.907	0.217
Btg1	11-32	2.264	0.006	0.125	0.037
Btg2	32-56	2.258	0.003	0.072	0.024
Btng1	56-65/85	2.408	0.002	0.058	0.021
Btng2	85-110	2.870	0.002	0.062	0.023
Btng3	110-124	3.632	0.002	0.103	0.034
2Btng4	124-152	5.412	0.003	0.452	0.083
2Btng5	152-180+	4.697	0.004	0.414	0.079
Pedon 9 Typic Endoaqualf; fine, kaolinitic, isohyperthemic					
Apg1	0-10	3.063	0.029	0.655	0.172
Apg2	10-22	1.035	0.009	0.025	0.015
Btg1	22-38	1.217	0.005	0.047	0.020
Btg2	38-60	1.372	0.004	0.061	0.022
Btg3	60-83	1.487	0.002	0.059	0.019
Btg4	83-102	1.409	0.002	0.029	0.011
2Btg5	102-121	1.313	0.005	0.020	0.009
2Btg6	121-140	1.318	0.006	0.024	0.010
2Btg7	140-162	1.404	0.008	0.026	0.012
2Btg8	162-190	1.618	0.009	0.040	0.018
Pedon 10 Typic Natraqualf; fine, kaolinitic, isohyperthemic					
Apg	0-16	2.507	0.018	0.380	0.099
Btg1	16-31	1.280	0.005	0.062	0.018
Btg2	31-52	1.015	0.004	0.030	0.006
Btg3	52-69	1.099	0.003	0.027	0.005
Btg4	69-95	1.316	0.003	0.030	0.006
2Btng1	95-128	1.367	0.002	0.021	0.005
2Btng2	128-161	1.852	0.002	0.012	0.003
2Btng3	161-187	2.281	0.020	0.006	0.003
2Btng4	187-210+	2.201	0.012	0.007	0.004

Appendix Table C3 (Continued)

Horizon	Depth	Soluble Na	Soluble K	Soluble Ca	Soluble Mg
	cm	(……..…cmol(+) kg-1……..…..……)			
Location 3 : Sandy over clayey textures salt affected soils *(Kula Ronghai series)*					
Pedon 11	Typic Natraqualf; fine, kaolinitic, isohyperthemic				
Apg	0-15/23	0.068	0.011	0.000	0.000
Bcg	23-46	0.224	0.019	0.000	0.000
Btg1	46-65	0.701	0.045	0.000	0.002
Btg2	65-88	0.959	0.009	0.001	0.001
Btg3	88-113	1.194	0.003	0.008	0.003
2Btng1	113-140	1.395	0.004	0.016	0.006
2Btng2	140-172	1.461	0.005	0.013	0.005
2Btng3	172-205+	1.393	0.005	0.009	0.004
Pedon 12	Typic Natraqualf; fine, kaolinitic, isohyperthemic				
Apg	0-19/20	0.069	0.006	0.006	0.001
Apng	20-27/32	0.030	0.001	0.001	0.000
Bcg	32-54/63	0.214	0.013	0.000	0.001
Btg1	63-82/87	0.499	0.097	0.000	0.003
Btg2	87-111/114	0.538	0.107	0.000	0.004
2Btg3	114-137	0.454	0.066	0.000	0.002
2Btg4	137-155	0.502	0.066	0.000	0.003
2Btng1	155-183	0.518	0.032	0.000	0.001
2Btng2	183-207+	0.605	0.027	0.000	0.001
Pedon 13	Typic Endoaqualf; fine, kaolinitic, isohyperthemic				
Apg1	0-18	0.089	0.012	0.011	0.003
Apg2	18-30	0.032	0.004	0.001	0.001
Btg1	30-48	0.229	0.002	0.009	0.004
Btg2	48-73	0.200	0.001	0.002	0.002
Btg3	73-91	0.181	0.002	0.002	0.002
2Btg4	91-118	0.175	0.003	0.090	0.003
2Btg5	118-150	0.150	0.002	0.002	0.001
2Btg6	150-185	0.131	0.002	0.194	0.008
2Btg7	185-210+	0.123	0.002	0.000	0.001
Pedon 14	Typic Natraqualf; fine-loamy, mixed,active, isohyperthemic				
Apg	0-28	0.163	0.025	0.005	0.003
Bng	28-44	0.114	0.007	0.000	0.000
Bcg	44-66	0.612	0.012	0.000	0.001
Btng1	66-85	0.595	0.052	0.000	0.001
Btng2	85-110	0.760	0.063	0.000	0.001
Btng3	110-137	0.890	0.048	0.000	0.000
2Btng4	137-161	0.976	0.004	0.000	0.000
2Btng5	161-183	0.940	0.009	0.000	0.000
2Btg	183-206+	1.105	0.004	0.001	0.000
Pedon 15	Typic Natraqualf; fine, kaolinitic, isohyperthemic				
Apg	0-15	0.118	0.010	0.000	0.000
Bcg	15-50	0.538	0.044	0.000	0.000
Btg1	50-70	0.671	0.113	0.000	0.003
Btg2	70-90	0.685	0.110	0.000	0.003
Btg3	90-110	0.699	0.055	0.000	0.001
2Btg4	110-130	0.769	0.085	0.000	0.002
2Btng1	130-153	0.775	0.021	0.000	0.000
2Btg5	153-182	0.900	0.010	0.000	0.000
2Btng2	182-200	1.102	0.005	0.000	0.000

Appendix Table C3 (Continued)

Horizon	Depth	Soluble Na	Soluble K	Soluble Ca	Soluble Mg
	cm	(……..cmol(+) kg-1……..……)			
Pedon 16 Typic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic					
Apg1	0-16/18	0.071	0.006	0.004	0.001
Apg2	18-21/28	0.028	0.001	0.000	0.000
Bcng	28-47/57	0.351	0.017	0.000	0.000
Btng1	57-72	0.421	0.045	0.000	0.001
Btng2	72-94	0.567	0.068	0.000	0.002
Btng3	94-113	0.569	0.039	0.000	0.000
2Btng4	113-138	0.579	0.029	0.000	0.000
2Btg	138-169	0.670	0.014	0.000	0.000
2Btng5	169-202+	0.779	0.007	0.000	0.000
Location 4 : Clayey textured salt affected soils *(Udon series)*					
Pedon 17 Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic					
Ang	0-20	11.165	0.088	1.070	0.408
ABng	20-36	7.683	0.036	0.102	0.114
Btng1	36-60	9.626	0.024	1.020	0.381
Btng2	60-85	8.668	0.019	0.960	0.335
Btng3	85-110	8.463	0.014	1.109	0.387
Btng4	110-130	9.208	0.011	1.413	0.476
Bssg1	130-165	10.844	0.018	1.584	0.531
Bssg2	165-200+	8.740	0.019	0.856	0.293
Pedon 18 Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic					
Ang	0-19	5.051	0.051	0.103	0.117
Btng1	19-43	5.582	0.024	0.198	0.109
Btng2	43-64	6.649	0.017	0.586	0.158
Btng3	64-94	7.061	0.013	0.640	0.209
Btng4	94-113	6.981	0.009	0.782	0.268
Btgn5	113-140	6.606	0.007	0.761	0.251
2Btg	140-169	4.970	0.009	0.777	0.246
2Btng6	169-195+	3.128	0.032	0.013	0.023
Pedon 19 Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic					
Ang	0-19	5.577	0.006	0.580	0.188
Btng1	19-38	4.799	0.017	0.154	0.070
Btng2	38-56	5.283	0.017	0.225	0.094
Btng3	56-77	5.101	0.007	0.461	0.100
2Btng4	77-100	4.029	0.006	0.359	0.095
2Btng5	100-119	3.081	0.012	0.504	0.135
2Btng6	119-146	2.701	0.008	0.658	0.172
2Btng7	146-175	3.417	0.013	0.471	0.127
2Btng8	175-210+	4.112	0.015	0.474	0.150
Pedon 20 Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic					
Ang	0-20	4.391	0.041	0.072	0.069
Btng1	20-44	4.453	0.017	0.120	0.067
Btng2	44-66	5.524	0.011	0.272	0.121
Btng3	66-89	5.635	0.009	0.420	0.125
Btng4	89-113	5.978	0.008	0.505	0.157
Btng5	113-139	5.791	0.008	0.598	0.182
Btng6	139-171	7.429	0.008	0.642	0.221
Btng7	171-200+	11.619	0.015	0.923	0.393

Appendix Table C3 (continued)

Horizon	Depth	Soluble Na	Soluble K	Soluble Ca	Soluble Mg
	cm	(……..cmol(+) kg-1……..……)			
Pedon 21	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic				
Ang	0-18	5.806	0.057	0.338	0.145
Btng1	18-45	5.209	0.020	0.102	0.088
Btng2	45-68	7.299	0.014	0.709	0.273
Btng3	68-89	8.472	0.011	1.083	0.445
Btng4	89-112	9.147	0.012	1.213	0.460
Btng5	112-137	10.509	0.015	1.632	0.598
Btng6	137-161	10.508	0.017	1.454	0.564
Btng7	161-200+	10.534	0.016	0.860	0.367
Pedon 22	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic				
Ang	0-21	6.877	0.086	1.067	0.408
Btng1	21-41	5.572	0.019	0.503	0.181
Btng2	41-66	7.726	0.015	0.832	0.331
Btng3	66-88	10.893	0.015	1.615	0.666
Btng4	88-108	12.692	0.009	1.828	0.772
Btng5	108-132	13.894	0.011	1.837	0.749
Btng6	132-165	13.423	0.013	1.571	0.613
Btng7	165-184	9.016	0.012	0.771	0.290
Btng8	184-202+	8.290	0.012	0.534	0.210
Location 5 : Sandy textured salt affected soils *(Roi Et, saline variant 2)*					
Pedon 23	Typic Natraqualf; sandy, silicious, subactive, isohyperthemic				
Apng	0-11	6.112	0.046	0.004	0.011
Bng1	11-30	1.143	0.010	0.000	0.003
Bng2	30-47	1.697	0.012	0.002	0.007
Btng1	47-69	1.489	0.023	0.000	0.003
Btng2	69-95	2.265	0.113	0.000	0.006
Btng3	95-110	2.751	0.077	0.000	0.005
Btng4	110-130	3.235	0.069	0.000	0.004
Btng5	130-153	2.887	0.121	0.000	0.007
2Btng6	153-178	2.765	0.428	0.000	0.013
2Btng7	178-200+	3.112	0.163	0.000	0.006
Pedon 24	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic				
Apng	0-12	4.435	0.016	0.517	0.217
Btng1	12-30	2.400	0.005	0.000	0.002
Btng2	30-53	2.443	0.006	0.000	0.001
Btng3	53-73	2.354	0.094	0.000	0.008
Btng4	73-100	2.354	0.036	0.000	0.015
Btng5	100-128	2.452	0.035	0.000	0.013
2Btng6	128-155	2.783	0.197	0.000	0.009
2Crtng	155-200+	3.366	0.042	0.000	0.003
Pedon 25	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic				
Apg	0-17/30	0.119	0.007	0.001	0.002
Bg	17-30	0.033	0.004	0.000	0.000
Btng1	30-52	0.210	0.041	0.000	0.003
Btng2	52-71	0.431	0.100	0.000	0.010
Btng3	71-92	0.641	0.133	0.000	0.016
2BCrng1	92-120	1.714	0.247	0.000	0.040
2BCrng2	120-143	2.500	0.056	0.000	0.026
2BCrg	143-170	3.322	0.042	0.002	0.023
2BCrng3	170-200	3.495	0.038	0.004	0.020

Appendix Table C3 (Continued)

Horizon	Depth	Soluble Na	Soluble K	Soluble Ca	Soluble Mg
	cm	(……..cmol(+) kg-1……..…..……)			
Pedon 26	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic				
Apg	0-14	0.338	0.010	0.017	0.016
Bng	14-31/46	0.188	0.005	0.000	0.000
Btng1	46-53	0.838	0.002	0.001	0.001
Btng2	53-73	1.705	0.004	0.001	0.004
Btng3	73-92	2.077	0.007	0.002	0.005
2Btng4	92-114	2.044	0.012	0.000	0.001
2Btng5	114-137	2.061	0.043	0.000	0.003
2Btng6	137-164	2.633	0.027	0.000	0.005
2BCrng	164-200+	3.430	0.030	0.000	0.015
Pedon 27	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic				
Apng	0-20/22	0.111	0.005	0.000	0.001
Bg	22-40	0.043	0.001	0.024	0.001
Bng	40-58	0.068	0.001	0.000	0.000
Btng1	58-82	0.490	0.016	0.000	0.001
Btng2	82-104	0.711	0.037	0.000	0.003
Btng3	104-122	1.135	0.007	0.000	0.000
Btng4	122-143	1.431	0.008	0.000	0.001
Btng5	143-160	1.540	0.010	0.000	0.000
2Btng6	160-180	1.662	0.013	0.000	0.001
2Btng7	180-202+	1.881	0.029	0.000	0.001
Pedon 28	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic				
Apng	0-10/13	0.759	0.007	0.020	0.011
Bng	13-30	0.315	0.002	0.016	0.010
Btng1	30-44	1.455	0.002	0.007	0.004
Btng2	44-66	1.969	0.006	0.000	0.002
Btng3	66-86	2.109	0.013	0.000	0.002
Btng4	86-107	2.696	0.014	0.000	0.001
Btng5	107-138/144	2.716	0.019	0.000	0.001
2Btng6	144-168	2.881	0.055	0.000	0.002
2Btng7	168-200	4.419	0.032	0.000	0.002

Appendix Table C4 Correlation matrix amoung the chemical properties of salt affected soils (marked cored correlations are significant at $p<0.05$, N=248).

	pH (H_2O)	pH (KCl)	OM	Total N	Avai. P	Avai. K	Exch. Ca	Exch. Mg	Exch. K	Exch. Na	Sum bases	EA	CEC by sum	CEC	BS by sum	BS	EC	SAR	ESP	Soluble Ca	Soluble Mg	Soluble K	Soluble Na
pH	1.00																						
pH (KCl)	**0.93**	1.00																					
OM	**-0.43**	**-0.40**	1.00																				
Total N	**-0.45**	**-0.40**	**0.94**	1.00																			
Avai.P	**0.15**	**0.15**	-0.04	-0.02	1.00																		
Avai. K	-0.01	0.05	**0.36**	**0.34**	**0.49**	1.00																	
Exch. Ca	**-0.31**	**-0.25**	**0.28**	**0.38**	0.00	**0.53**	1.00																
Exch. Mg	**-0.25**	**-0.18**	**0.21**	**0.31**	**0.19**	**0.63**	**0.84**	1.00															
Exch. K	-0.01	0.05	**0.36**	**0.34**	**0.49**	**1.00**	**0.53**	**0.63**	1.00														
Exch. Na	-0.08	-0.01	0.12	**0.23**	0.02	**0.62**	**0.78**	**0.79**	**0.62**	1.00													
Sum bases	**-0.27**	**-0.20**	**0.25**	**0.36**	0.04	**0.59**	**0.99**	**0.90**	**0.59**	**0.87**	1.00												
EA	**-0.51**	**-0.48**	**0.41**	**0.42**	0.02	**0.52**	**0.71**	**0.70**	**0.52**	**0.62**	**0.73**	1.00											
CEC by sum	**-0.37**	**-0.31**	**0.32**	**0.41**	0.03	**0.61**	**0.96**	**0.89**	**0.61**	**0.84**	**0.97**	**0.87**	1.00										
CEC	**-0.24**	**-0.18**	**0.26**	**0.40**	0.07	**0.53**	**0.84**	**0.81**	**0.53**	**0.71**	**0.86**	**0.59**	**0.82**	1.00									
BS by sum	0.02	0.01	-0.06	**-0.13**	-0.02	**-0.21**	**-0.28**	**-0.28**	**-0.21**	**-0.29**	**-0.30**	0.01	**-0.21**	**-0.38**	1.00								
BS	**0.15**	**0.24**	0.00	-0.06	0.01	0.00	0.02	-0.01	0.00	0.01	0.01	0.00	0.01	**-0.16**	**0.17**	1.00							
EC	**-0.14**	0.00	**0.20**	**0.16**	-0.01	**0.19**	**0.24**	**0.24**	**0.19**	**0.24**	**0.26**	**0.26**	**0.27**	0.08	-0.07	**0.77**	1.00						
SAR	**0.50**	**0.53**	**-0.19**	**-0.25**	0.05	0.08	**-0.21**	**-0.13**	0.08	0.08	**-0.15**	**-0.17**	**-0.17**	**-0.27**	**0.13**	**0.65**	**0.50**	1.00					
ESP	**0.50**	**0.55**	**-0.26**	**-0.31**	-0.03	0.08	**-0.19**	-0.10	0.08	**0.23**	-0.10	-0.03	-0.08	**-0.30**	**0.22**	**0.43**	**0.30**	**0.74**	1.00				
Soluble Ca	**-0.46**	**-0.39**	**0.33**	**0.37**	-0.05	**0.30**	**0.64**	**0.63**	**0.30**	**0.52**	**0.65**	**0.64**	**0.69**	**0.48**	-0.11	0.11	0.55	-0.08	-0.06	1.00			
Soluble Mg	**-0.45**	**-0.38**	**0.29**	**0.32**	-0.04	**0.35**	**0.70**	**0.68**	**0.35**	**0.59**	**0.71**	**0.69**	**0.75**	**0.51**	-0.11	**0.15**	**0.53**	-0.05	-0.02	**0.97**	1.00		
Soluble K	**0.54**	**0.47**	**-0.15**	**-0.19**	0.05	**0.18**	-0.12	-0.05	**0.18**	**0.13**	-0.06	-0.16	-0.10	-0.11	-0.12	0.03	-0.03	**0.42**	**0.41**	-0.14	-0.11	1.00	
Soluble Na	**-0.29**	**-0.17**	**0.25**	**0.28**	0.02	**0.48**	**0.67**	**0.68**	**0.48**	**0.70**	**0.71**	**0.63**	**0.73**	**0.51**	**-0.18**	**0.48**	**0.77**	**0.28**	**0.20**	**0.80**	**0.84**	-0.04	1.00

Appendix Table C5 Correlation matrix amoung the chemical properties of salt affected soils from location 1 (marked cored correlations are significant at $p<0.05$, N=43).

	pH (H_2O)	pH (KCl)	OM	Total N	Avai. P	Avai. K	Exch. Ca	Exch. Mg	Exch. K	Exch. Na	Sum bases	EA	CEC by sum	CEC	BS by sum	BS	EC	SAR	ESP	Soluble Ca	Soluble Mg	Soluble K	Soluble Na
pH	1.00																						
pH (KCl)	**0.97**	1.00																					
OM	-0.16	-0.04	1.00																				
Total N	-0.24	-0.15	**0.94**	1.00																			
Avai.P	0.13	0.27	**0.41**	0.28	1.00																		
Avai. K	**0.70**	**0.73**	-0.09	-0.15	0.03	1.00																	
Exch. Ca	0.19	0.25	0.09	0.08	0.24	0.21	1.00																
Exch. Mg	**0.41**	**0.41**	-0.08	-0.09	0.05	**0.48**	**0.68**	1.00															
Exch. K	**0.70**	**0.73**	-0.09	-0.15	0.03	**1.00**	0.21	**0.48**	1.00														
Exch. Na	**0.82**	**0.76**	**-0.30**	**-0.37**	-0.24	**0.71**	0.11	**0.41**	**0.71**	1.00													
Sum bases	**0.66**	**0.66**	-0.13	-0.17	0.02	**0.61**	**0.78**	**0.77**	**0.61**	**0.71**	1.00												
EA	**-0.34**	**-0.39**	-0.15	-0.05	-0.25	-0.06	-0.17	-0.19	-0.06	-0.07	-0.17	1.00											
CEC by sum	**0.44**	**0.42**	-0.20	-0.19	-0.11	**0.55**	**0.65**	**0.63**	**0.55**	**0.64**	**0.86**	**0.36**	1.00										
CEC	0.23	0.15	**-0.36**	**-0.30**	**-0.51**	**0.34**	0.22	**0.49**	**0.34**	**0.66**	**0.58**	**0.37**	**0.74**	1.00									
BS by sum	-0.25	-0.28	0.16	0.16	0.23	**-0.32**	**-0.36**	**-0.60**	**-0.32**	**-0.46**	**-0.56**	**0.44**	**-0.30**	**-0.49**	1.00								
BS	0.23	**0.36**	0.24	0.09	**0.87**	0.10	**0.44**	0.26	0.10	-0.04	0.28	**-0.30**	0.11	**-0.32**	-0.05	1.00							
EC	0.14	0.29	**0.31**	0.17	**0.89**	0.07	**0.39**	0.24	0.07	-0.13	0.20	**-0.31**	0.03	**-0.36**	-0.07	**0.98**	1.00						
SAR	**0.72**	**0.79**	-0.01	-0.14	**0.56**	0.51	0.25	0.28	**0.51**	**0.49**	**0.48**	-0.22	**0.34**	-0.04	-0.13	**0.71**	**0.65**	1.00					
ESP	**0.93**	**0.92**	-0.16	-0.29	0.22	0.65	0.09	0.29	**0.65**	**0.78**	**0.56**	-0.28	**0.38**	0.15	-0.20	**0.34**	0.26	**0.81**	1.00				
Soluble Ca	-0.16	-0.01	**0.44**	**0.45**	**0.64**	0.05	0.19	0.08	0.05	**-0.34**	-0.07	-0.20	-0.17	**-0.35**	-0.04	**0.52**	**0.62**	0.18	-0.18	1.00			
Soluble Mg	0.03	0.17	0.24	0.11	**0.78**	-0.06	**0.39**	0.19	-0.06	-0.17	0.17	-0.22	0.04	-0.29	-0.08	**0.92**	**0.92**	**0.53**	0.11	**0.59**	1.00		
Soluble K	**0.80**	**0.74**	-0.25	**-0.30**	-0.15	**0.63**	0.23	**0.44**	**0.63**	**0.90**	**0.73**	-0.15	**0.61**	**0.61**	**-0.43**	-0.01	-0.09	**0.42**	**0.69**	-0.22	-0.09	1.00	
Soluble Na	0.29	**0.44**	0.27	0.11	**0.84**	0.23	**0.45**	**0.35**	0.23	0.07	**0.37**	-0.27	0.21	-0.20	-0.16	**0.98**	**0.97**	**0.75**	**0.40**	**0.52**	**0.89**	0.09	1.00

Appendix Table C6 Correlation matrix amoung the chemical properties of salt affected soils from location 2 (marked cored correlations are significant at $p<0.05$, N=47).

	pH (H_2O)	pH (KCl)	OM	Total N	Avai. P	Avai. K	Exch. Ca	Exch. Mg	Exch. K	Exch. Na	Sum bases	EA	CEC by sum	CEC	BS by sum	BS	EC	SAR	ESP	Soluble Ca	Soluble Mg	Soluble K	Soluble Na
pH	1.00																						
pH (KCl)	**0.97**	1.00																					
OM	**-0.81**	**-0.77**	1.00																				
Total N	**-0.82**	**-0.78**	**0.99**	1.00																			
Avai.P	**-0.40**	**-0.35**	**0.73**	**0.72**	1.00																		
Avai. K	**-0.67**	**-0.64**	**0.75**	**0.77**	**0.60**	1.00																	
Exch. Ca	-0.20	-0.16	0.03	**0.05**	-0.11	**0.43**	1.00																
Exch. Mg	-0.20	-0.14	0.22	0.24	0.10	**0.62**	**0.84**	1.00															
Exch. K	**-0.67**	**-0.64**	**0.75**	**0.77**	**0.60**	**1.00**	**0.43**	**0.62**	1.00														
Exch. Na	**0.39**	**0.38**	**-0.38**	**-0.36**	**-0.33**	0.06	**0.38**	**0.43**	0.06	1.00													
Sum bases	-0.03	0.00	-0.08	-0.06	-0.18	**0.40**	**0.94**	**0.86**	**0.40**	**0.67**	1.00												
EA	**-0.92**	**-0.94**	**0.75**	**0.75**	0.25	**0.67**	0.24	0.26	**0.67**	-0.17	0.15	1.00											
CEC by sum	**-0.60**	**-0.59**	**0.41**	**0.43**	0.03	**0.70**	**0.80**	**0.76**	**0.70**	**0.36**	**0.78**	**0.73**	1.00										
CEC	**-0.42**	**-0.41**	0.19	0.22	-0.09	**0.58**	**0.89**	**0.80**	**0.58**	**0.42**	**0.87**	**0.54**	**0.94**	1.00									
BS by sum	**-0.90**	**-0.92**	**0.82**	**0.82**	**0.41**	**0.58**	-0.09	0.00	**0.58**	**-0.37**	-0.19	**0.91**	**0.44**	0.18	1.00								
BS	**0.58**	**0.59**	-0.28	**-0.29**	-0.02	-0.17	-0.20	0.04	-0.17	**0.41**	0.00	**-0.52**	**-0.32**	**-0.39**	**-0.39**	1.00							
EC	-0.03	0.00	0.22	0.21	0.21	0.22	-0.18	0.14	0.22	0.02	-0.10	0.04	-0.05	-0.19	0.16	**0.68**	1.00						
SAR	**0.53**	**0.48**	**-0.32**	**-0.34**	-0.17	-0.22	**-0.38**	-0.17	-0.22	**0.51**	-0.10	**-0.34**	**-0.29**	**-0.34**	-0.25	**0.79**	**0.54**	1.00					
ESP	**0.67**	**0.62**	**-0.53**	**-0.52**	**-0.32**	**-0.33**	-0.22	-0.13	**-0.33**	**0.76**	0.10	**-0.48**	-0.23	-0.23	**-0.46**	**0.70**	0.15	**0.83**	1.00				
Soluble Ca	-0.29	-0.23	**0.48**	**0.47**	**0.44**	**0.51**	0.08	**0.39**	**0.51**	-0.07	0.08	0.24	0.21	0.07	**0.31**	**0.45**	**0.90**	0.21	-0.15	1.00			
Soluble Mg	**-0.3**0	-0.23	**0.51**	**0.50**	**0.48**	**0.52**	0.05	**0.37**	**0.52**	-0.10	0.04	0.23	0.18	0.03	**0.31**	**0.45**	**0.90**	0.21	-0.15	**1.00**	1.00		
Soluble K	-0.26	-0.23	**0.65**	**0.63**	**0.78**	**0.49**	-0.12	0.10	**0.49**	**-0.36**	-0.20	0.17	-0.03	-0.14	**0.32**	0.11	**0.42**	-0.07	**-0.34**	**0.59**	**0.63**	1.00	
Soluble Na	0.10	0.13	0.09	0.10	0.10	**0.34**	0.08	**0.44**	**0.34**	**0.52**	**0.29**	0.02	0.21	0.13	0.01	**0.72**	**0.81**	**0.65**	**0.44**	**0.74**	**0.72**	0.22	1.00

Appendix Table C7 Correlation matrix amoung the chemical properties of salt affected soils from location 3 (marked cored correlations are significant at $p<0.05$, N=53).

	pH (H_2O)	pH (KCl)	OM	Total N	Avai. P	Avai. K	Exch. Ca	Exch. Mg	Exch. K	Exch. Na	Sum bases	EA	CEC by sum	CEC	BS by sum	BS	EC	SAR	ESP	Soluble Ca	Soluble Mg	Soluble K	Soluble Na
pH	1.00																						
pH (KCl)	**0.84**	1.00																					
OM	**-0.64**	**-0.65**	1.00																				
Total N	**-0.65**	**-0.65**	**0.95**	1.00																			
Avai.P	**-0.40**	**-0.46**	**0.54**	**0.53**	1.00																		
Avai. K	**0.30**	**0.46**	**-0.36**	**-0.32**	-0.29	1.00																	
Exch. Ca	**0.62**	**0.59**	**-0.57**	**-0.51**	**-0.43**	**0.75**	1.00																
Exch. Mg	**0.33**	**0.35**	**-0.29**	-0.24	**-0.28**	**0.36**	**0.48**	1.00															
Exch. K	**0.30**	**0.46**	**-0.36**	**-0.32**	**-0.29**	**1.00**	**0.75**	**0.36**	1.00														
Exch. Na	**0.79**	**0.82**	**-0.59**	**-0.60**	**-0.48**	**0.58**	**0.79**	**0.39**	**0.58**	1.00													
Sum bases	**0.65**	**0.65**	**-0.58**	**-0.52**	**-0.46**	**0.73**	**0.97**	**0.66**	**0.73**	**0.83**	1.00												
EA	**-0.45**	**-0.45**	0.15	0.14	-0.07	0.22	0.10	0.03	0.22	-0.22	0.04	1.00											
CEC by sum	**0.51**	**0.50**	**-0.51**	**-0.46**	**-0.46**	**0.75**	**0.95**	**0.63**	**0.75**	**0.74**	**0.97**	**0.30**	1.00										
CEC	0.18	0.26	**-0.43**	**-0.33**	**-0.41**	**0.65**	**0.68**	**0.42**	**0.65**	**0.37**	**0.66**	**0.29**	**0.70**	1.00									
BS by sum	**-0.55**	**-0.58**	**0.50**	**0.42**	**0.44**	**-0.70**	**-0.75**	**-0.40**	**-0.70**	**-0.64**	**-0.75**	0.08	**-0.69**	**-0.62**	1.00								
BS	0.23	0.12	0.05	0.00	**0.54**	-0.01	0.07	-0.06	-0.01	0.11	0.05	**-0.34**	-0.04	**-0.46**	0.05	1.00							
EC	**0.51**	**0.62**	**-0.40**	**-0.45**	-0.24	0.19	0.11	0.06	0.19	**0.41**	0.16	**-0.48**	0.03	-0.09	**-0.34**	0.20	1.00						
SAR	**0.81**	**0.79**	**-0.49**	**-0.53**	**-0.32**	**0.33**	**0.52**	**0.36**	**0.33**	**0.83**	**0.60**	**-0.48**	**0.45**	0.08	**-0.47**	**0.30**	**0.56**	1.00					
ESP	**0.60**	**0.51**	**-0.46**	**-0.52**	-0.08	-0.04	0.18	-0.03	-0.04	**0.51**	0.21	**-0.53**	0.06	**-0.37**	-0.13	**0.59**	**0.44**	**0.65**	1.00				
Soluble Ca	-0.25	-0.23	-0.08	-0.07	-0.05	0.10	0.03	-0.01	0.10	-0.24	-0.02	**0.31**	0.06	0.26	-0.08	-0.19	-0.15	**-0.29**	-0.27	1.00			
Soluble Mg	-0.13	0.00	-0.06	-0.03	-0.08	0.17	0.03	0.14	0.17	-0.09	0.04	0.13	0.07	**0.29**	-0.19	-0.21	0.17	-0.15	**-0.29**	**0.59**	1.00		
Soluble K	**0.50**	**0.48**	-0.20	-0.21	-0.16	**0.31**	**0.49**	**0.34**	**0.31**	**0.55**	**0.53**	-0.21	**0.45**	**0.29**	**-0.30**	0.03	-0.04	**0.43**	0.11	-0.19	0.13	1.00	
Soluble Na	**0.58**	**0.74**	**-0.51**	**-0.56**	**-0.38**	**0.39**	**0.29**	0.11	**0.39**	**0.59**	**0.33**	**-0.43**	0.20	0.10	**-0.49**	0.10	**0.92**	**0.66**	**0.43**	-0.15	0.19	0.12	1.00

Appendix Table C8 Correlation matrix amoung the chemical properties of salt affected soils from location 4 (marked cored correlations are significant at $p<0.05$, N=50).

	pH (H_2O)	pH (KCl)	OM	Total N	Avai. P	Avai. K	Exch. Ca	Exch. Mg	Exch. K	Exch. Na	Sum bases	EA	CEC by sum	CEC	BS by sum	BS	EC	SAR	ESP	Soluble Ca	Soluble Mg	Soluble K	Soluble Na
pH	1.00																						
pH (KCl)	**0.93**	1.00																					
OM	0.26	0.10	1.00																				
Total N	0.14	0.05	**0.81**	1.00																			
Avai.P	**0.56**	**0.49**	**0.68**	**0.52**	1.00																		
Avai. K	**0.37**	0.28	**0.80**	**0.77**	**0.74**	1.00																	
Exch. Ca	-0.17	-0.11	0.00	**0.36**	0.00	**0.40**	1.00																
Exch. Mg	-0.18	-0.11	-0.03	**0.32**	-0.02	**0.42**	**0.92**	1.00															
Exch. K	**0.37**	0.28	**0.80**	**0.77**	**0.74**	**1.00**	**0.40**	**0.42**	1.00														
Exch. Na	-0.02	0.06	0.03	**0.43**	0.04	**0.45**	**0.90**	**0.89**	**0.45**	1.00													
Sum bases	-0.13	-0.07	0.02	**0.38**	0.01	**0.44**	**0.99**	**0.95**	**0.44**	**0.94**	1.00												
EA	**-0.49**	**-0.54**	0.25	**0.53**	-0.05	**0.41**	**0.75**	**0.77**	**0.41**	**0.69**	**0.76**	1.00											
CEC by sum	-0.22	-0.18	0.07	**0.43**	0.00	**0.45**	**0.98**	**0.95**	**0.45**	**0.93**	**0.99**	**0.85**	1.00										
CEC	-0.17	-0.14	0.09	**0.44**	0.03	**0.51**	**0.94**	**0.95**	**0.51**	**0.92**	**0.96**	**0.83**	**0.97**	1.00									
BS by sum	0.28	**0.32**	-0.20	**-0.39**	-0.08	**-0.43**	**-0.67**	**-0.64**	**-0.43**	**-0.62**	**-0.67**	**-0.66**	**-0.70**	**-0.72**	1.00								
BS	**0.29**	**0.38**	**-0.40**	**-0.46**	-0.06	**-0.45**	**-0.29**	**-0.34**	**-0.45**	**-0.32**	**-0.31**	**-0.61**	**-0.39**	**-0.48**	**0.64**	1.00							
EC	0.04	0.13	-0.24	**-0.30**	0.21	**-0.33**	-0.17	-0.22	**-0.33**	-0.28	-0.21	**-0.34**	-0.25	**-0.30**	**0.30**	**0.54**	1.00						
SAR	**0.45**	**0.30**	**0.36**	0.19	**0.36**	0.13	**-0.50**	**-0.50**	0.13	**-0.37**	**-0.48**	**-0.32**	**-0.46**	**-0.40**	0.17	-0.07	0.08	1.00					
ESP	**0.46**	**0.60**	-0.12	0.03	0.07	-0.02	0.04	-0.02	-0.02	**0.31**	0.09	-0.26	0.02	-0.05	**0.30**	**0.43**	0.04	0.10	1.00				
Soluble Ca	**-0.35**	-0.26	-0.27	-0.11	-0.13	-0.08	**0.46**	**0.51**	-0.08	**0.30**	**0.44**	**0.33**	**0.43**	**0.40**	-0.19	0.16	**0.42**	**-0.48**	-0.17	1.00			
Soluble Mg	**-0.34**	-0.25	-0.18	0.00	-0.08	0.02	**0.55**	**0.60**	0.02	**0.41**	**0.54**	**0.43**	**0.54**	**0.50**	**-0.29**	0.05	**0.38**	**-0.47**	-0.14	**0.98**	1.00		
Soluble K	0.28	0.26	**0.78**	**0.64**	**0.82**	**0.79**	0.09	0.06	**0.79**	0.12	0.11	0.12	0.11	0.13	-0.18	-0.21	0.01	0.21	0.05	-0.10	-0.03	1.00	
Soluble Na	**-0.29**	-0.26	-0.09	0.13	-0.04	0.22	**0.72**	**0.79**	0.22	**0.63**	**0.72**	**0.64**	**0.74**	**0.74**	**-0.53**	-0.21	0.15	**-0.39**	-0.18	**0.84**	**0.89**	0.02	1.00

Appendix Table C9 Correlation matrix amoung the chemical properties of salt affected soils from location 5 (marked cored correlations are significant at $p<0.05$, N=55)

	pH (H_2O)	pH (KCl)	OM	Total N	Avai. P	Avai. K	Exch. Ca	Exch. Mg	Exch. K	Exch. Na	Sum bases	EA	CEC by sum	CEC	BS by sum	BS	EC	SAR	ESP	Soluble Ca	Soluble Mg	Soluble K	Soluble Na
pH	1.00																						
pH (KCl)	**0.93**	1.00																					
OM	**-0.51**	**-0.54**	1.00																				
Total N	**-0.52**	**-0.54**	**0.75**	1.00																			
Avai.P	0.25	0.21	-0.11	0.10	1.00																		
Avai. K	**0.52**	**0.44**	**-0.32**	-0.08	**0.77**	1.00																	
Exch. Ca	**0.43**	**0.31**	-0.21	0.00	**0.28**	**0.59**	1.00																
Exch. Mg	**0.38**	**0.29**	**-0.33**	-0.02	**0.67**	**0.87**	**0.51**	1.00															
Exch. K	**0.52**	**0.44**	**-0.32**	-0.08	**0.77**	**1.00**	**0.59**	**0.87**	1.00														
Exch. Na	**0.49**	**0.43**	**-0.48**	**-0.30**	0.18	**0.69**	**0.45**	**0.61**	**0.69**	1.00													
Sum bases	**0.51**	**0.39**	**-0.33**	-0.08	**0.38**	**0.77**	**0.95**	**0.70**	**0.77**	**0.68**	1.00												
EA	**-0.35**	**-0.42**	-0.04	**0.27**	0.04	0.16	**0.34**	**0.34**	0.16	0.25	**0.38**	1.00											
CEC by sum	**0.43**	**0.30**	**-0.31**	-0.03	**0.36**	**0.74**	**0.94**	**0.71**	**0.74**	**0.67**	**0.99**	**0.49**	1.00										
CEC	**0.37**	**0.30**	**-0.31**	0.03	**0.47**	**0.83**	**0.58**	**0.86**	**0.83**	**0.74**	**0.76**	**0.38**	**0.77**	1.00									
BS by sum	-0.18	-0.12	0.16	-0.04	-0.16	**-0.43**	**-0.31**	**-0.52**	**-0.43**	**-0.64**	**-0.47**	**-0.41**	**-0.50**	**-0.47**	1.00								
BS	**0.31**	**0.47**	0.05	-0.18	-0.12	-0.21	-0.08	**-0.31**	-0.21	**-0.30**	-0.18	**-0.50**	-0.24	**-0.31**	**0.38**	1.00							
EC	**0.34**	**0.53**	0.00	-0.14	-0.06	0.01	-0.07	-0.11	0.01	0.08	-0.05	**-0.46**	-0.12	-0.07	-0.08	**0.72**	1.00						
SAR	**0.58**	**0.65**	-0.25	**-0.38**	-0.04	0.13	0.00	-0.11	0.13	0.19	0.03	**-0.49**	-0.04	-0.02	0.17	**0.64**	**0.70**	1.00					
ESP	**0.40**	**0.55**	**-0.28**	**-0.48**	-0.25	-0.19	**-0.28**	**-0.33**	-0.19	0.08	-0.25	**-0.48**	**-0.30**	**-0.30**	0.10	**0.63**	**0.57**	**0.66**	1.00				
Soluble Ca	-0.11	0.00	**0.29**	0.23	-0.03	-0.10	-0.04	-0.09	-0.10	-0.14	-0.08	-0.16	-0.10	-0.10	0.02	0.22	**0.47**	-0.05	-0.02	1.00			
Soluble Mg	0.03	0.12	0.25	0.21	0.10	0.05	0.10	0.06	0.05	-0.06	0.07	-0.14	0.05	0.01	-0.06	0.23	**0.47**	-0.05	-0.04	**0.97**	1.00		
Soluble K	**0.51**	**0.40**	-0.22	-0.26	0.04	**0.30**	0.22	0.21	**0.30**	**0.43**	**0.30**	-0.16	0.26	0.17	**-0.28**	-0.03	0.10	0.21	0.17	-0.07	0.07	1.00	
Soluble Na	**0.55**	**0.66**	**-0.27**	-0.22	0.24	**0.54**	0.22	**0.40**	**0.54**	**0.61**	**0.39**	-0.15	**0.34**	**0.48**	**-0.43**	**0.36**	**0.77**	**0.62**	**0.39**	0.25	0.31	0.23	1.00

Appendix Table C10 Total analysis of salt affected soils.

Soil samples	Depth cm	SiO_2	Al_2O_3	Fe_2O_3	TiO_2	Na_2O	MgO	K_2O	CaO	S	P	Mn	Cu	Zn	Cl
		(……..…..…..g kg^{-1}……..…….…)								(……..…….. mg kg^{-1}……..…..…)					
Location 1: Sandy textured salt affected soils *(Roi Et, saline variant)*															
Pedon 1	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic														
Apng	0-12	930.0	7.2	5.43	2.17	20.35	2.65	0.48	2.24	10	25	95	5	10	14980
Bng	12-37	955.9	21.5	6.29	2.17	3.91	1.66	0.72	0.14	nd	nd	10	nd	10	1119
Btng1	37-60	920.3	26.3	8.15	2.00	3.50	1.82	0.96	0.28	nd	nd	245	nd	10	1006
Btng2	60-76	896.2	52.9	11.58	2.84	5.26	2.98	1.93	0.42	nd	nd	125	5	10	1550
Btng3	76-100	902.2	53.1	15.73	3.67	5.53	3.65	3.01	1.40	nd	nd	375	5	15	1300
Btng4	100-128	877.6	45.5	14.01	2.84	5.93	3.32	2.41	0.42	nd	nd	210	10	10	1940
Btng5	128-140	920.8	26.5	12.72	1.83	4.58	2.32	1.69	0.28	nd	nd	185	5	10	1869
2Btng6	140-170	898.7	35.9	17.73	2.67	6.07	2.98	2.05	0.42	nd	nd	330	5	10	2276
2Btng7	170-190+	899.4	30.2	11.01	2.34	5.39	2.65	1.69	0.28	nd	nd	300	5	10	2092
Pedon 2	Typic Natraqualf; coarse-loamy, mixed, semiactive isohyperthemic														
Apng	0-20	956.5	2.1	4.15	1.83	1.21	0.99	0.36	0.14	nd	nd	35	nd	10	278
Btng1	20-34	897.7	31.7	8.44	2.34	3.77	2.16	0.96	0.42	nd	nd	190	nd	10	429
Btng2	34-55	908.6	51.2	11.01	3.17	6.07	3.32	1.45	0.56	nd	nd	280	10	15	447
Btng3	55-80	902.4	54.0	14.01	4.50	5.66	4.15	2.53	2.24	nd	nd	555	10	15	673
Btng4	80-109	914.1	54.6	12.01	4.34	5.80	3.65	3.01	0.56	nd	nd	205	10	15	771
Btng5	109-130	858.7	68.6	14.01	4.34	7.55	5.14	4.58	0.84	nd	nd	240	5	15	1237
Btcng	130-142	836.1	71.6	21.59	3.34	7.82	5.64	4.58	0.98	nd	nd	1710	5	20	1191
2Btng6	142-175	890.8	58.0	15.44	4.00	6.74	4.97	3.61	0.56	nd	nd	295	5	15	1034
2Btng7	175-200	860.4	65.8	16.44	3.84	7.28	5.47	4.22	0.56	nd	nd	505	5	15	1300
Pedon 3	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic														
Apg	0-12	952.6	21.5	6.72	3.50	4.18	1.82	0.96	0.98	20	20	140	5	10	2413
Btg1	12-20/25	962.1	28.3	8.15	3.17	2.70	1.82	1.08	0.56	nd	nd	225	5	10	1276
Btng	25-48/52	935.3	39.1	12.15	3.50	1.62	1.99	1.08	0.70	nd	5	285	10	10	474
Btg2	52-80/85	933.2	44.4	11.72	4.00	2.29	2.49	1.69	0.70	nd	nd	310	5	15	365
Btg3	85-110	916.7	57.4	12.44	4.34	2.02	3.15	2.41	0.98	nd	nd	315	10	15	661
Btg4	110-130	878.4	65.9	12.58	4.50	2.56	3.81	2.53	1.26	nd	nd	135	5	15	1012
Btg5	130-153	907.9	40.8	13.15	3.34	1.89	2.65	1.81	0.84	nd	nd	180	10	15	713
2Btg6	153-180	898.9	40.8	10.87	2.50	2.02	2.82	1.93	0.84	nd	nd	185	5	10	612
2Btg7	180-205+	920.3	38.5	10.58	2.00	1.62	2.65	1.93	0.70	nd	nd	160	5	15	428
Pedon 4	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic														
Apng	0-20	922.3	39.1	11.15	5.34	3.91	3.15	0.96	1.26	35	45	375	10	15	2450
Btng1	20-48	939.6	35.9	9.58	2.84	2.97	1.66	0.48	0.42	nd	nd	120	nd	10	1268
Btg1	48-70	902.6	43.8	10.01	2.84	4.58	1.82	0.72	0.42	nd	nd	25	5	10	1348
Btg2	70-95	898.7	63.5	14.44	3.17	2.70	2.49	1.08	0.56	nd	nd	25	5	15	1598
Btng2	95-130	877.6	58.8	12.72	3.34	3.24	2.82	1.20	0.70	nd	nd	130	5	15	1271
Btng3	130-148/150	879.5	54.2	14.58	3.50	4.18	4.81	1.33	1.40	nd	nd	1370	10	15	1293
2Btng4	150-180	898.3	48.2	15.58	3.34	4.45	3.32	1.45	1.40	nd	nd	1165	5	10	1542
2Btng5	180-200+	910.5	50.6	13.44	3.00	4.58	3.65	1.69	1.40	nd	nd	405	5	10	1681
Pedon 5	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic														
Apng	0-20	961.2	14.9	5.72	2.34	1.62	0.99	0.24	0.28	nd	nd	70	5	5	767
Btg1	20-40	959.9	20.0	7.29	3.17	1.35	1.16	0.36	0.28	nd	20	160	nd	5	682
Btg2	40-70	885.3	64.2	12.58	3.50	1.75	1.99	0.84	0.56	nd	20	350	5	15	864
Btg3	70-90	844.8	87.9	13.15	3.67	2.16	2.16	0.96	0.56	nd	25	65	5	15	1243
Btg4	90-112	905.8	64.6	12.44	3.34	1.75	1.82	0.84	0.42	nd	15	65	5	10	1186
Btg5	112-140	888.5	68.0	13.44	3.34	1.62	1.82	0.84	0.42	nd	20	55	5	10	855
Btg6	14-170	877.1	78.0	12.87	3.34	1.89	1.99	0.96	0.42	nd	15	55	10	15	927
Btg7	170-193	875.6	74.6	12.87	3.34	1.62	2.16	0.96	0.42	nd	nd	105	5	10	759

Appendix Table C10 (Continued)

Soil samples	Depth cm	SiO_2	Al_2O_3	Fe_2O_3	TiO_2	Na_2O	MgO	K_2O	CaO	S	P	Mn	Cu	Zn	Cl
		(……...……..g kg^{-1}……..)								(……...…….. mg kg^{-1}……...…)					
Location 2: Clayey textured salt affected soils *(Phimai series)*															
Pedon 6	Typic Natraqualf; fine, kaolinitic, isohyperthemic														
Apng1	0-10	699.8	148.5	40.32	7.67	10.11	6.14	5.42	6.02	325	180	385	15	30	9633
Apng2	10-20	676.7	181.0	43.89	7.84	7.41	6.30	6.14	4.76	345	105	415	15	40	4786
Btng1	20-33	690.8	180.1	36.17	8.34	7.41	4.81	4.34	4.20	210	55	325	10	25	3423
Btng2	33-48	717.1	170.6	28.02	7.34	21.43	4.15	3.37	3.92	200	40	95	10	20	2900
Btng3	48-70	705.8	175.3	30.17	7.34	8.63	5.31	4.46	4.48	190	30	105	10	30	2887
Btng4	70-88	751.8	141.5	22.02	6.84	4.45	5.97	5.18	4.20	125	15	225	10	25	2366
2Btng5	88-114	756.9	129.2	21.30	6.00	9.97	6.14	5.42	4.06	95	5	200	10	25	2456
2Btng6	114-135	778.7	112.2	20.87	5.34	9.30	5.80	5.18	3.64	80	15	215	5	25	2862
2Btng7	135-156	836.5	86.0	17.59	4.84	8.36	4.81	4.82	3.22	50	nd	190	15	20	2517
2Btng8	156-190	859.4	70.9	20.16	4.17	7.68	4.15	4.58	2.94	45	nd	405	10	20	2809
Pedon 7	Typic Natraqualf; very fine, kaolinitic, isohyperthemic														
Apg1	0-18	695.1	164.0	45.04	8.84	5.12	5.80	5.78	5.32	300	200	245	15	40	3016
Apg2	18-30	689.5	163.2	51.90	8.84	4.85	6.14	6.75	5.04	215	160	260	25	45	2573
Btg	30-42	716.2	154.0	47.61	9.34	4.58	5.80	6.14	4.34	210	130	235	15	35	2521
Btng1	42-53/64	652.5	188.6	53.47	10.84	5.66	6.47	6.87	6.44	215	65	280	20	45	3201
Btng2	64-79	654.0	195.7	48.61	11.18	6.20	6.30	6.38	6.30	190	70	160	20	40	3450
Btng3	79-100	632.4	206.3	43.46	13.34	6.34	4.81	4.58	5.74	165	65	220	10	30	3482
Btng4	100-124	679.5	190.8	36.46	12.34	6.47	3.98	3.37	5.04	125	35	145	15	30	3451
Btng5	124-151	702.3	184.6	32.45	10.34	5.12	5.64	5.06	5.32	90	30	210	20	30	3690
2Btng6	151-176	761.2	143.6	25.74	7.34	8.22	5.80	5.30	4.20	55	20	100	10	25	2477
2Btng7	176-200	792.6	114.5	16.87	5.00	8.09	4.48	4.10	3.36	45	10	60	5	20	3268
Pedon 8	Typic Natraqualf; fine, kaolinitic, isohyperthemic														
Apg	0-11	668.8	182.1	46.18	10.68	4.99	5.64	5.78	6.02	325	260	230	20	45	3751
Btg1	11-32	614.2	213.5	52.76	11.51	5.66	5.64	5.78	5.46	185	125	320	20	40	1705
Btg2	32-56	661.5	201.2	38.46	13.18	3.64	4.15	3.85	5.18	105	70	180	15	30	1416
Btng1	56-65/85	657.2	206.9	41.03	11.68	5.12	4.31	3.61	5.32	105	45	150	15	30	1528
Btng2	85-110	675.6	199.7	40.32	12.18	5.39	4.31	3.73	5.18	50	20	195	20	30	1585
Btng3	110-124	666.8	206.7	39.46	12.18	5.66	4.48	3.85	5.46	60	25	130	20	30	2238
2Btng4	124-152	543.6	252.1	66.48	10.68	7.28	7.79	8.07	8.12	90	35	475	30	55	4583
2Btng5	152-180+	616.8	212.6	55.19	9.34	7.28	7.46	7.83	6.72	90	35	460	20	45	4134
Pedon 9	Typic Endoaqualf; fine, kaolinitic, isohyperthemic														
Apg1	0-10	761.6	132.6	29.60	7.01	4.04	4.48	4.10	4.48	360	250	195	15	30	2887
Apg2	10-22	748.8	139.1	48.47	7.17	3.10	4.64	4.46	3.92	180	130	315	20	30	849
Btg1	22-38	711.5	162.7	42.46	8.51	3.10	5.14	5.30	4.34	145	100	285	15	35	907
Btg2	38-60	670.0	191.0	39.46	9.01	3.37	4.81	4.70	4.76	85	75	285	10	35	1066
Btg3	60-83	672.8	200.5	34.60	9.01	8.22	5.14	4.58	5.88	nd	40	200	15	30	1245
Btg4	83-102	714.1	168.0	38.46	8.67	5.39	6.63	6.38	6.86	nd	35	275	20	35	1072
2Btg5	102-121	726.3	152.1	32.03	7.51	3.77	7.30	7.35	6.72	nd	40	180	15	30	981
2Btg6	121-140	776.2	116.8	33.03	6.67	7.01	6.47	5.06	5.88	10	25	945	15	30	1009
2Btg7	140-162	762.5	121.1	32.03	6.51	7.14	6.80	8.19	5.88	nd	40	925	15	35	1183
2Btg8	162-190	811.0	99.4	26.45	5.84	6.07	5.80	7.35	5.18	40	50	475	15	35	1207
Pedon 10	Typic Natraqualf; fine, kaolinitic, isohyperthemic														
Apg	0-16	768.4	128.3	36.03	7.51	3.77	4.48	4.34	3.92	240	240	190	20	35	1981
Btg1	16-31	727.2	153.8	43.32	9.01	2.97	5.31	5.66	3.92	165	145	230	15	40	951
Btg2	31-52	712.6	163.2	42.18	10.34	2.56	5.31	6.02	4.20	45	110	240	20	35	816
Btg3	52-69	682.0	178.2	45.04	10.34	3.24	5.64	6.26	4.76	25	85	215	20	40	860
Btg4	69-95	662.8	196.5	38.32	12.51	3.37	4.48	4.46	5.04	50	65	125	15	30	972
2Btng1	95-128	700.2	181.0	35.46	12.01	4.18	3.48	3.01	4.62	25	40	90	15	30	838
2Btng2	128-161	697.4	183.1	36.46	10.84	4.85	4.15	3.37	5.60	nd	15	235	15	30	1151
2Btng3	161-187	684.2	169.9	51.76	9.17	7.01	8.46	9.88	7.14	15	55	1085	25	50	1451
2Btng4	187-210+	732.1	144.9	39.89	8.17	7.95	7.63	9.88	6.30	nd	40	635	20	45	1471

Appendix Table C10 (Continued)

Soil samples	Depth cm	SiO_2	Al_2O_3	Fe_2O_3	TiO_2	Na_2O	MgO	K_2O	CaO	S	P	Mn	Cu	Zn	Cl
		(……..……..g kg^{-1}……..…..……)								(……..…….. mg kg^{-1}……..…)					
Location 3: Sandy over clayey textures salt affected soils *(Kula Ronghai series)*															
Pedon 11	Typic Natraqualf; fine, kaolinitic, isohyperthemic														
Apg	0-15/23	915.2	30.6	6.00	3.00	0.94	0.99	0.36	0.14	50	55	155	nd.	10	nd.
Bcg	23-46	743.8	178.0	26.45	15.01	10.51	6.80	2.77	3.64	10	10	1210	10	20	85
Btg1	46-65	724.4	188.9	21.16	7.17	3.10	4.15	3.25	4.20	nd	nd	170	5	25	350
Btg2	65-88	762.2	164.8	19.59	10.51	3.10	3.48	2.53	3.22	nd	nd	65	10	20	645
Btg3	88-113	782.6	144.0	20.30	9.84	3.10	2.82	2.17	2.66	nd	nd	20	10	20	750
2Btng1	113-140	805.2	121.9	24.02	9.67	2.97	2.32	1.93	2.10	nd	nd	10	10	15	870
2Btng2	140-172	826.2	113.2	19.87	9.01	2.97	2.32	1.93	1.82	nd	nd	10	10	15	875
2Btng3	172-205+	817.7	125.6	16.87	10.68	2.97	2.49	2.53	1.96	nd	nd	15	10	15	855
Pedon 12	Typic Natraqualf; fine, kaolinitic, isohyperthemic														
Apg	0-19/20	951.6	10.8	2.43	2.84	0.81	0.50	0.12	nd	30	25	5	nd	5	10
Apng	20-37/42	962.3	3.6	1.86	2.17	0.54	0.50	nd	nd	nd	nd	nd	nd	10	nd
Bcg	42-54/63	827.7	116.2	17.59	5.17	2.02	2.32	1.45	2.10	nd	nd	860	5	15	45
Btg1	63-82/87	771.7	161.9	17.30	7.84	2.83	3.48	2.53	3.50	10	nd	145	5	25	105
Btg2	87-111/114	742.3	169.7	18.87	9.34	2.97	3.32	2.53	3.36	nd	5	35	5	20	165
2Btg3	114-137	771.7	140.4	51.90	9.17	2.56	2.82	1.93	2.66	nd	nd	40	15	20	185
2Btg4	137-155	780.9	143.4	20.16	9.34	2.70	2.82	2.17	2.52	nd	5	20	10	15	230
2Btng1	155-183	824.1	115.8	18.87	8.84	2.29	2.16	1.81	1.96	nd	nd	10	10	15	295
2Btng2	183-207+	816.4	120.2	19.02	8.84	2.43	2.16	2.05	1.96	nd	nd	10	5	15	345
Pedon 13	Typic Endoaqualf; fine, kaolinitic, isohyperthemic														
Apg1	0-18	941.9	10.0	3.00	2.34	0.54	0.50	0.12	nd	35	40	10	nd	10	10
Apg2	18-30	986.9	7.0	3.29	1.50	0.54	0.50	0.12	nd	5	nd	nd	nd	5	5
Btg1	30-48	724.6	178.2	29.74	8.17	1.89	3.15	2.53	2.38	60	20	300	5	20	200
Btg2	48-73	708.1	204.4	21.16	9.51	1.48	3.65	3.01	2.80	5	10	225	5	25	145
Btg3	73-91	769.1	158.3	20.45	9.84	1.35	2.98	2.29	2.38	nd	nd	145	5	15	125
2Btg4	91-118	796.7	136.2	24.59	10.18	1.21	2.32	1.93	1.96	nd	nd	145	5	20	120
2Btg5	118-150	792.6	131.9	30.45	10.34	1.08	2.16	1.81	1.96	nd	nd	55	15	15	100
2Btg6	150-185	756.5	154.0	36.89	10.68	1.21	2.49	2.29	2.38	nd	10	65	10	20	65
2Btg7	185-210+	727.6	165.9	63.05	11.34	1.21	2.49	2.29	2.52	25	15	55	20	25	75
Pedon 14	Typic Natraqualf; fine-loamy, mixed,active, isohyperthemic														
Apg	0-28	981.1	6.4	2.43	2.34	0.81	0.50	0.12	nd	60	55	5	nd	10	30
Bng	28-44	974.9	9.6	2.43	2.17	0.81	0.50	0.12	nd	nd	nd	50	nd	10	35
Bcg	44-66	719.9	187.4	44.46	7.34	3.64	3.81	2.53	3.08	20	5	1305	5	25	280
Btng1	66-85	775.7	142.1	37.32	5.67	5.53	2.16	2.41	2.38	nd	nd	535	5	20	240
Btng2	85-110	812.1	127.0	25.45	6.34	3.10	2.98	2.29	2.10	nd	nd	170	5	15	320
Btng3	110-137	759.7	162.1	17.16	8.51	3.64	3.32	2.53	2.66	nd	nd	70	10	15	585
2Btng4	137-161	790.3	129.2	26.88	9.17	2.97	2.16	1.57	1.68	nd	nd	35	10	10	635
2Btng5	161-183	806.5	127.2	17.16	8.51	2.97	2.32	1.57	1.82	nd	nd	50	10	15	575
2Btg	183-206+	794.3	131.1	25.45	9.17	2.97	2.16	1.57	1.68	nd	10	25	10	20	705
Pedon 15	Typic Natraqualf; fine, kaolinitic, isohyperthemic														
Apg	0-15	982.7	9.3	4.29	2.17	0.81	0.50	0.12	nd	30	15	50	nd	5	20
Bcg	15-50	705.3	199.1	22.02	8.01	3.64	4.31	2.89	3.64	15	5	345	5	25	255
Btg1	50-70	727.8	182.7	20.30	8.51	3.64	4.31	3.01	3.50	15	nd	100	5	20	300
Btg2	70-90	746.8	161.4	20.30	8.84	3.37	3.81	2.65	2.94	nd	nd	60	10	20	320
Btg3	90-110	751.1	156.6	20.02	8.51	3.37	3.65	2.53	2.80	nd	nd	115	5	20	380
2Btg4	110-130	782.1	134.0	24.45	8.17	2.97	2.65	1.81	2.10	nd	nd	215	5	20	370
2Btng1	130-153	785.8	123.6	31.74	8.17	2.83	2.32	1.57	1.82	nd	5	45	10	15	420
2Btg5	153-182	794.1	112.8	51.47	8.17	2.56	2.16	1.33	1.68	nd	5	70	15	20	460
2Btng2	182-200	799.0	124.3	25.16	8.34	2.97	2.16	1.45	1.68	nd	nd	30	10	15	585

Appendix Table C10 (Continued)

Soil samples	Depth cm	SiO_2	Al_2O_3	Fe_2O_3	TiO_2	Na_2O	MgO	K_2O	CaO	S	P	Mn	Cu	Zn	Cl
		(……..g kg^{-1}……..)								(……..…….. mg kg^{-1}…….....…)					
Pedon 16 Typic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic															
Apg1	0-16/18	982.2	3.8	2.43	2.17	0.54	0.50	0.12	nd	35	20	nd	nd	5	10
Apg2	18-21/28	958.2	1.1	2.43	1.67	0.40	0.33	nd	nd	nd	nd	nd	nd	nd	5
Bcng	28-47/57	767.4	152.7	35.89	6.17	2.70	3.15	2.17	2.94	40	nd	1920	10	20	65
Btng1	57-72	738.7	178.0	18.01	8.51	3.37	4.15	3.01	3.50	nd	nd	105	5	20	155
Btng2	72-94	745.1	163.4	17.73	8.17	3.37	3.81	2.89	3.22	nd	nd	75	5	15	265
Btng3	94-113	783.6	140.6	16.58	7.67	2.97	2.82	2.05	2.38	nd	nd	535	5	15	290
2Btng4	113-138	785.3	138.3	17.16	7.51	2.83	2.65	1.81	1.96	nd	nd	145	5	15	300
2Btg	138-169	803.5	128.1	16.44	7.51	2.83	2.32	1.57	1.82	nd	nd	50	5	20	400
2Btng5	169-202+	819.2	114.9	15.87	7.01	2.70	1.99	1.20	1.54	nd	nd	20	10	10	525
Location 4 Clayey textured salt affected soils *(Udon series)*															
Pedon 17 Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic															
Ang	0-20	696.1	144.4	50.90	10.84	11.59	10.78	12.17	8.54	580	190	615	25	50	9335
ABng	20-36	734.9	132.6	39.75	10.84	10.38	8.79	9.16	6.02	355	125	350	25	40	7690
Btng1	36-60	789.8	106.6	32.31	11.34	9.71	5.80	5.42	4.34	430	45	105	20	25	8945
Btng2	60-85	784.1	117.5	34.31	12.01	9.17	5.97	5.54	4.48	400	30	150	20	30	8995
Btng3	85-110	792.4	115.8	28.45	11.51	8.36	5.31	4.34	4.06	425	25	90	15	25	7765
Btng4	110-130	776.2	128.9	28.88	11.68	8.90	5.80	4.58	5.04	410	20	75	20	25	9650
Bssg1	130-165	682.7	172.7	41.03	10.18	9.97	10.78	12.41	8.95	405	45	105	20	40	13010
Bssg2	165-200+	613.6	204.8	51.33	9.34	8.63	12.93	18.19	8.26	280	145	120	30	55	7710
Pedon 18 Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic															
Ang	0-19	736.1	136.4	40.89	10.84	7.95	8.46	9.52	5.60	795	130	355	30	40	3850
Btng1	19-43	769.7	127.7	35.03	12.34	6.74	5.97	5.54	3.92	515	55	185	20	25	3945
Btng2	43-64	776.8	142.8	33.31	12.18	7.55	5.31	4.10	3.92	360	20	115	20	30	4520
Btng3	64-94	795.2	116.8	29.02	12.68	7.68	5.14	3.61	4.76	280	30	80	30	25	7060
Btng4	94-113	806.1	112.2	28.31	12.84	7.82	4.97	3.37	5.18	265	10	60	20	25	7480
Btgn5	113-140	821.1	105.6	25.45	11.84	7.82	5.14	3.49	4.76	205	5	55	20	20	6285
2Btg	140-169	853.6	75.6	20.02	8.01	7.95	4.81	3.85	3.50	170	10	50	15	15	4595
2Btng6	169-195+	771.2	115.3	35.74	8.84	8.63	7.63	6.99	6.30	270	15	255	20	25	7600
Pedon 19 Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic															
Ang	0-19	757.3	125.8	38.46	10.34	6.74	7.79	8.43	4.62	375	105	360	25	35	2110
Btng1	19-38	777.9	120.4	36.60	11.01	6.61	5.97	5.90	3.64	550	50	175	20	30	3185
Btng2	38-56	729.9	149.3	39.03	10.34	7.28	6.80	5.90	4.20	605	45	275	15	30	4240
Btng3	56-77	733.2	149.5	29.74	9.17	7.68	5.64	4.22	4.20	520	30	155	10	20	4735
2Btng4	77-100	831.3	83.1	14.58	5.50	6.20	3.65	2.41	2.24	175	10	40	nd	10	3135
2Btng5	100-119	903.7	32.5	8.44	2.34	4.85	2.16	1.20	1.12	125	nd	25	nd	10	2300
2Btng6	119-146	925.5	17.8	6.29	1.67	5.53	1.82	0.96	1.12	90	nd	40	5	5	2965
2Btng7	146-175	905.8	35.9	9.29	3.34	6.47	3.15	2.05	1.82	65	nd	145	5	15	2980
2Btng8	175-210+	886.1	43.5	14.15	3.84	7.14	3.65	2.65	2.38	95	40	115	5	15	3320
Pedon 20 Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic															
Ang	0-20	759.5	122.6	36.17	10.51	7.41	7.63	8.07	4.76	505	125	255	25	35	3425
Btng1	20-44	760.1	133.6	36.46	11.18	6.74	6.47	5.90	4.20	655	50	175	20	30	3735
Btng2	44-66	763.7	134.3	33.60	11.34	7.55	5.97	4.70	4.34	525	40	215	15	30	5035
Btng3	66-89	777.2	128.1	32.17	11.51	7.55	5.64	4.22	4.34	570	25	160	20	25	5035
Btng4	89-113	776.2	121.3	28.45	10.34	8.36	5.64	4.10	4.62	430	10	105	15	25	5750
Btng5	113-139	783.2	105.4	23.30	6.51	8.63	6.47	4.94	3.92	270	10	160	10	20	4355
Btng6	139-171	711.3	141.9	35.89	8.67	10.24	9.29	8.67	6.72	305	40	940	20	30	8215
Btng7	171-200+	609.1	193.5	57.76	9.17	11.73	14.10	15.54	9.79	300	100	450	35	55	11490

Appendix Table C10 (Continued)

Soil samples	Depth	SiO_2	Al_2O_3	Fe_2O_3	TiO_2	Na_2O	MgO	K_2O	CaO	S	P	Mn	Cu	Zn	Cl
	cm	(……..g kg^{-1}……..……)								(……..…….. mg kg^{-1}…..…..…)					
Pedon 21	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic														
Ang	0-18	703.6	146.1	44.18	11.68	8.49	9.29	9.76	5.88	480	150	310	20	45	4080
Btng1	18-45	726.3	137.4	39.17	11.68	7.82	7.96	7.95	7.00	2145	90	145	20	45	5430
Btng2	45-68	745.6	129.8	39.17	11.18	8.90	7.30	6.50	5.32	595	50	110	20	30	8610
Btng3	68-89	765.2	128.5	39.32	11.68	8.09	6.47	5.54	4.48	470	40	100	20	30	6560
Btng4	89-112	744.3	133.2	37.03	11.34	10.24	7.63	5.54	7.84	460	15	100	20	30	13580
Btng5	112-137	689.1	152.3	43.61	10.68	12.54	10.61	8.55	11.33	405	40	120	20	40	21180
Btng6	137-161	636.7	180.6	53.90	10.01	10.78	12.77	11.56	11.75	425	65	140	30	45	18155
Btng7	161-200+	586.0	200.5	63.48	9.01	6.47	14.59	15.54	11.33	360	115	185	35	55	13870
Pedon 22	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic														
Ang	0-21	749.8	126.0	38.60	10.51	8.22	7.63	7.71	5.74	755	145	215	20	35	6000
Btng1	21-41	763.7	124.7	36.17	10.68	7.28	6.80	6.50	4.76	530	70	120	20	35	5110
Btng2	41-66	757.8	128.1	36.60	10.18	8.49	7.30	6.26	5.60	440	55	110	20	30	7835
Btng3	66-88	695.7	157.0	39.75	10.68	12.67	10.12	8.31	10.63	500	40	200	30	40	18785
Btng4	88-108	637.3	177.6	43.03	10.01	13.75	12.77	11.20	12.73	425	35	335	25	45	21115
Btng5	108-132	602.4	203.7	45.18	9.51	11.59	14.10	14.94	12.03	330	45	275	30	50	16216
Btng6	132-165	553.7	228.6	57.48	8.51	11.05	15.59	18.91	11.89	260	65	205	40	65	13650
Btng7	165-184	570.8	219.7	69.48	8.84	8.90	14.92	17.35	10.35	235	105	330	40	65	8805
Btng8	184-202+	592.2	215.8	65.48	9.01	7.14	14.59	16.86	8.67	205	95	220	40	65	5290
Location 5 Sandy textured salt affected soils *(Roi Et, saline variant 2)*															
Pedon 23	Typic Natraqualf; sandy, silicious, subactive, isohyperthemic														
Apng	0-11	991.3	nd	2.29	1.00	5.12	0.50	0.24	nd	80	nd	15	nd	20	2610
Bng1	11-30	995.4	nd	1.72	1.00	1.62	0.33	0.12	nd	nd	nd	nd	nd	5	470
Bng2	30-47	994.5	nd	2.00	1.17	1.89	0.50	0.12	nd	nd	nd	nd	nd	5	710
Btng1	47-69	993.1	nd	4.00	1.17	1.89	0.50	0.12	nd	nd	nd	nd	nd	5	655
Btng2	69-95	903.7	26.8	8.58	1.67	5.12	5.31	1.08	0.28	10	nd	130	nd	10	1090
Btng3	95-110	902.2	37.4	12.44	1.50	4.72	4.15	1.57	0.42	35	nd	180	nd	5	1425
Btng4	110-130	922.9	29.3	10.01	2.00	2.83	8.46	2.17	0.42	30	nd	185	nd	10	1595
Btng5	130-153	878.6	34.0	23.30	2.17	6.20	4.48	3.13	0.42	50	5	875	nd	10	1505
2Btng6	153-178	859.8	69.9	16.73	3.67	7.28	9.95	8.67	0.84	40	nd	295	10	15	1700
2Btng7	178-200+	774.0	105.4	24.02	4.50	8.22	22.22	19.88	1.26	45	130	335	5	20	1990
Pedon 24	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic														
Apng	0-12	950.7	11.7	6.00	2.00	2.16	19.07	1.08	0.84	205	5	55	5	10	2765
Btng1	12-30	933.0	34.8	9.01	2.34	8.22	16.09	1.33	0.70	40	nd	100	5	5	1325
Btng2	30-53	896.8	34.0	11.01	2.50	4.85	2.49	1.33	0.56	20	nd	570	5	5	1270
Btng3	53-73	926.3	31.6	8.15	2.84	5.93	2.98	1.69	0.56	nd	nd	135	nd	5	1450
Btng4	73-100	868.4	54.8	21.59	3.17	5.66	4.97	3.49	0.84	nd	nd	1670	nd	10	1265
Btng5	100-128	837.3	73.5	15.44	3.34	7.68	8.13	5.78	0.84	nd	nd	555	5	10	1895
2Btng6	128-155	800.3	89.7	18.87	3.84	8.36	14.26	11.32	1.26	nd	55	460	5	15	2275
2Crtng	155-200+	628.1	99.8	35.74	4.17	6.20	23.71	25.06	114.59	230	500	615	10	35	2080
Pedon 25	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic														
Apg	0-17/30	983.7	2.6	3.72	1.83	0.81	0.99	0.48	0.14	15	25	10	nd	10	50
Bg	17-30	957.8	5.7	3.43	1.67	0.81	1.16	0.48	0.14	nd	nd	nd	5	10	25
Btng1	30-52	915.8	26.5	7.29	2.67	1.35	2.82	1.33	0.70	nd	nd	30	5	5	70
Btng2	52-71	880.8	55.0	19.30	3.34	2.56	5.64	3.25	1.12	nd	nd	1245	5	10	130
Btng3	71-92	901.1	47.0	11.29	2.84	2.83	9.78	5.66	0.84	nd	30	285	5	10	225
2BCrng1	92-120	724.4	98.6	30.88	5.00	3.64	40.96	25.90	38.48	75	355	520	10	25	910
2BCrng2	120-143	676.7	113.7	41.46	5.34	3.91	51.07	37.10	41.14	5	505	660	10	40	1615
2BCrg	143-170	631.3	133.6	52.76	6.17	3.91	60.69	48.43	31.76	nd	645	875	15	50	1750
2BCrng3	170-200	675.8	143.2	50.47	6.34	4.04	38.31	63.48	5.04	nd	700	320	20	50	1630

Appendix Table C10 (Continued)

Soil samples	Depth cm	SiO_2	Al_2O_3	Fe_2O_3	TiO_2	Na_2O	MgO	K_2O	CaO	S	P	Mn	Cu	Zn	Cl
		(……..g kg^{-1}……...…….)								(……...…….. mg kg^{-1}……...…)					
Pedon 26	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic														
Apg	0-14	992.7	1.7	2.72	1.33	0.94	0.66	0.24	0.14	nd	nd	nd	nd	5	245
Bng	14-31/46	995.2	nd	2.43	1.33	0.94	0.50	0.24	nd	nd	nd	nd	nd	5	105
Btng1	46-53	912.9	31.4	2.72	1.83	2.02	1.99	0.84	0.14	10	nd	15	nd	10	450
Btng2	53-73	895.7	53.5	11.72	2.17	3.50	2.98	1.81	0.28	75	nd	210	nd	10	990
Btng3	73-92	870.3	51.0	12.72	2.34	4.45	3.32	2.17	0.42	105	nd	75	nd	10	1210
2Btng4	92-114	848.0	72.4	24.88	3.50	5.93	5.64	4.70	0.70	70	30	1045	5	15	1420
2Btng5	114-137	865.8	70.5	14.58	3.34	5.53	7.30	6.38	0.70	70	nd	280	5	15	1410
2Btng6	137-164	790.1	92.8	20.45	4.17	6.87	19.90	12.17	0.98	35	40	170	5	15	1930
2BCrng	164-200+	770.2	101.7	35.31	4.50	5.66	44.94	18.79	1.40	15	180	245	10	25	2155
Pedon 27	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic														
Apng	0-20/22	981.3	nd	1.86	1.00	0.81	0.50	0.12	nd	nd	nd	nd	nd	10	20
Bg	22-40	996.4	nd	1.43	1.17	0.54	0.33	0.12	nd	nd	nd	nd	nd	5	10
Bng	40-58	995.8	nd	1.57	1.00	0.54	0.33	0.12	nd	nd	nd	nd	nd	5	40
Btng1	58-82	896.4	49.3	9.44	2.00	2.56	2.65	1.33	0.70	10	nd	370	nd	5	245
Btng2	82-104	902.4	42.9	9.29	2.00	2.97	2.65	1.57	0.70	5	nd	435	5	10	350
Btng3	104-122	836.3	81.1	13.15	3.00	4.85	4.31	2.89	1.12	55	nd	715	5	15	725
Btng4	122-143	817.7	89.7	17.59	2.84	5.12	4.97	3.37	1.12	105	nd	1665	5	15	870
Btng5	143-160	876.5	72.2	16.44	2.84	4.18	4.15	3.37	0.98	40	nd	610	5	10	815
2Btng6	160-180	857.7	73.7	11.58	2.67	4.72	4.48	3.73	0.84	10	nd	305	5	10	1040
2Btng7	180-202	870.7	78.6	17.73	3.67	4.45	4.64	4.10	0.98	80	nd	160	10	15	1025
Pedon 28	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic														
Apng	0-10/13	964.8	nd	1.86	1.17	1.48	0.33	0.24	nd	nd	10	nd	nd	5	465
Bng	13-30	962.7	nd	2.00	1.33	1.21	0.33	0.24	nd	nd	nd	5	nd	5	245
Btng1	30-44	910.1	23.1	9.58	1.83	3.24	1.82	0.96	0.42	15	nd	3610	nd	10	895
Btng2	44-66	914.1	22.5	7.15	1.67	4.31	2.16	1.45	0.42	nd	nd	240	nd	10	1285
Btng3	66-86	921.8	27.2	7.43	1.83	4.31	2.32	1.45	0.42	nd	nd	80	nd	10	1395
Btng4	86-107	867.7	41.6	9.29	1.67	6.47	3.48	1.93	0.56	nd	nd	255	nd	10	1955
Btng5	107-138/144	907.3	39.1	10.58	2.34	5.53	3.48	2.17	0.56	nd	nd	845	5	10	1570
2Btng6	144-168	843.8	71.4	14.58	3.67	7.28	5.47	4.10	0.84	40	nd	135	5	15	1880
2Btng7	168-200	772.7	117.7	38.89	5.84	9.03	7.96	7.47	1.40	60	20	275	15	20	3205

nd= not detect.

Appendix Table C11 Element compositions in salt affected soils.

Soil samples	Depth	Element concentrations (mg kg^{-1})																						
	(cm)	Li	Be	P	Ti	V	Cr	Mn	Co	Ni	Cu	Zn	Ga	As	Br	Se	Rb	Sr	Mo	Ag	Cd	I	Cs	Pb	U
Location 1 : Sandy textured salt affected soils *(Roi Et, saline variant)*																								
Pedon 1 Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																								
Apng	0-12	4.6	0.3	194	149	29.8	798	374	5.7	43.4	10.4	13.7	2.0	2.3	6.0	0.3	3.2	8.3	11.8	0.8	0.1	5.2	0.5	3.9	0.6
Bng	12-37	7.7	0.1	71	105	27.3	798	58	3.8	41.9	6.9	5.0	1.8	1.7	1.8	0.1	4.3	2.1	11.4	0.9	0.1	1.7	0.8	2.2	0.1
Btng1	37-60	17.1	0.3	78	121	32.0	742	228	4.6	43.8	30.2	21.1	3.6	1.8	1.7	nd	8.0	3.1	10.7	0.5	0.1	1.3	1.3	6.6	0.2
Btng2	60-76	28.7	0.6	61	129	33.6	634	221	7.3	40.1	8.3	9.1	4.5	1.7	1.5	nd	13.2	4.0	9.8	0.6	nd	1.4	2.0	5.3	0.2
Btng3	76-100	20.0	1.2	44	115	26.8	341	286	6.3	23.7	5.1	7.8	4.1	0.8	nd	nd	12.3	4.0	5.3	0.3	nd	0.7	1.5	4.6	0.1
Btng4	100-128	21.2	0.9	59	154	46.9	489	293	5.7	19.0	6.3	9.3	4.4	1.7	2.0	nd	14.6	4.5	9.0	0.7	nd	1.2	1.7	5.5	0.2
Btng5	128-140	14.3	0.6	55	127	44.0	671	306	6.6	38.9	8.9	8.7	3.8	2.0	0.5	nd	10.8	3.5	9.5	1.2	nd	0.2	1.3	5.1	0.2
2Btng6	140-170	14.1	1.0	51	162	53.1	577	429	9.7	37.4	8.0	8.7	4.4	3.1	0.1	nd	11.9	4.4	8.0	0.7	nd	nd	1.5	9.7	0.2
2Btng7	170-190+	12.9	1.8	74	133	37.5	532	393	20.5	24.2	17.3	13.2	3.7	1.5	1.8	nd	9.5	3.8	9.0	0.5	0.1	0.1	1.2	9.0	0.2
Pedon 2 Typic Natraqualf; coarse-loamy, mixed, semiactive isohyperthemic																								
Apng	0-20	4.5	0.3	76	103	26.9	871	119	5.7	44.7	7.3	4.9	1.8	1.4	1.3	0.2	3.4	1.9	11.7	0.8	nd	0.1	0.5	2.9	0.2
Btng1	20-34	15.4	0.5	70	129	32.4	655	329	4.7	23.6	6.8	7.0	4.1	1.4	0.1	nd	9.8	4.3	10.5	0.5	nd	0.3	1.5	4.2	0.2
Btng2	34-55	18.7	0.9	59	136	30.0	504	403	7.8	34.8	5.4	8.2	5.2	1.5	0.4	nd	12.0	5.3	6.9	0.6	nd	0.8	1.7	6.0	0.2
Btng3	55-80	20.6	1.1	55	163	37.5	390	533	6.6	19.3	5.5	9.9	6.4	1.4	1.4	nd	16.4	8.2	6.2	0.9	nd	0.6	2.0	7.1	0.2
Btng4	80-109	23.5	0.9	51	181	32.3	487	281	6.0	31.2	7.5	10.1	5.1	1.0	1.6	nd	19.3	6.3	6.0	0.7	nd	0.2	2.1	5.6	0.2
Btng5	109-130	24.4	1.0	54	186	40.8	438	318	8.2	19.9	9.1	12.6	5.4	1.4	1.2	nd	21.0	6.1	6.9	0.4	0.1	nd	2.1	7.5	0.3
Btcng	130-142	23.7	1.8	65	152	62.4	504	2090	36.6	40.2	14.5	24.7	12.1	3.3	0.4	nd	19.9	8.3	6.7	1.1	0.1	0.1	2.2	21.0	0.4
2Btng6	142-175	22.2	2.8	49	174	39.1	445	446	8.0	26.6	14.2	17.5	6.0	1.3	0.2	0.2	17.7	6.6	6.2	0.3	nd	nd	2.2	7.2	0.2
2Btng7	175-200	25.0	1.7	52	173	46.3	508	571	8.6	38.0	14.7	17.3	7.0	1.6	0.3	0.2	19.1	6.3	6.4	0.4	nd	nd	2.3	8.2	0.2
Pedon 3 Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																								
Apg	0-12	9.9	0.5	78	144	28.7	538	217	5.1	17.8	10.9	9.2	3.1	0.7	0.9	nd	6.7	4.4	7.6	0.5	nd	nd	1.1	4.7	0.3
Btg1	12-20/25	10.3	0.3	59	138	28.2	511	251	3.7	30.0	7.5	7.0	2.7	1.0	0.5	nd	6.8	3.1	6.3	1.3	nd	nd	1.2	4.5	0.2
Btng	25-48/52	17.3	0.5	67	141	34.2	435	417	5.3	17.2	9.6	9.6	4.4	1.1	0.9	0.1	9.7	3.2	6.7	0.6	nd	nd	1.8	7.6	0.3
Btg2	52-80/85	18.9	0.7	60	163	37.1	590	461	7.5	36.6	13.0	11.9	5.0	1.3	nd	nd	13.9	3.7	7.1	1.5	nd	nd	2.1	8.4	0.3
Btg3	85-110	24.4	0.9	52	159	35.5	462	379	7.2	19.6	11.5	12.2	5.2	0.8	1.1	0.4	15.9	3.8	6.3	0.1	nd	nd	2.3	8.1	0.3
Btg4	110-130	22.9	1.0	59	184	37.0	573	196	5.4	34.5	6.2	9.3	5.2	1.1	0.3	nd	15.6	4.6	6.7	0.1	nd	nd	2.4	5.6	0.3
Btg5	130-153	13.2	0.6	47	125	30.3	464	180	3.9	16.0	5.3	7.2	3.4	1.0	1.5	nd	8.5	2.9	6.2	0.1	nd	nd	1.3	7.9	0.2
2Btg6	153-180	14.2	0.6	48	127	33.7	715	206	5.7	41.3	6.4	7.9	3.9	1.5	0.5	nd	9.4	3.0	7.8	0.2	nd	nd	1.4	7.9	0.2
2Btg7	180-205+	12.0	0.5	52	106	38.8	635	206	5.2	19.3	7.2	8.5	3.5	1.3	1.6	nd	8.9	2.9	8.8	0.1	nd	nd	1.3	5.3	0.2

Appendix Table C11 (Continued)

Soil samples	Depth	Element concentrations (mg kg^{-1})																						
	(cm)	Li	Be	P	Ti	V	Cr	Mn	Co	Ni	Cu	Zn	Ga	As	Br	Se	Rb	Sr	Mo	Ag	Cd	I	Cs	Pb	U
Pedon 4 Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																								
Apng	0-20	15.6	1.1	83	141	30.9	564	389	10.3	35.0	6.4	8.6	4.4	1.1	3.3	0.2	5.6	5.2	6.6	0.3	nd	0.2	1.4	8.3	0.4
Btng1	20-48	13.3	0.2	68	119	31.5	648	182	3.6	19.1	6.2	5.4	3.0	1.1	1.4	0.1	4.4	2.9	8.6	0.1	nd	nd	1.2	2.6	0.2
Btg1	48-70	15.6	0.2	62	113	31.1	649	57	3.5	36.8	24.5	15.0	2.8	1.3	1.7	0.2	4.5	2.3	7.4	0.1	nd	nd	1.2	8.8	0.2
Btg2	70-95	34.4	0.5	57	122	34.6	452	53	3.0	16.0	6.0	7.0	4.3	1.1	0.9	nd	9.0	3.4	6.1	0.1	nd	nd	2.2	3.3	0.2
Btng2	95-130	22.6	0.6	49	110	31.5	523	165	4.2	31.2	6.0	6.2	3.7	1.3	1.7	nd	7.5	3.6	5.8	0.1	nd	0.8	1.7	7.2	0.2
Btng3	130-148/150	31.1	3.9	52	119	33.4	489	1549	25.6	40.5	6.9	11.4	8.3	1.3	0.6	nd	8.8	7.3	5.3	0.1	nd	3.1	1.9	7.7	0.2
2Btng4	150-180	28.9	1.4	47	118	44.9	482	1393	12.0	25.4	7.5	12.6	8.9	1.8	0.9	nd	9.0	7.8	6.3	0.2	0.1	0.3	1.8	10.5	0.2
2Btng5	180-200+	25.2	1.0	48	108	41.9	466	751	7.1	20.4	7.3	10.4	6.5	1.5	0.5	nd	9.4	7.7	6.4	0.2	nd	nd	1.8	8.2	0.2
Pedon 5 Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																								
Apng	0-20	8.0	0.5	60	104	27.4	767	131	4.9	39.5	6.2	4.4	2.2	1.4	0.3	nd	2.3	2.2	7.9	0.2	nd	nd	0.6	3.4	0.2
Btg1	20-40	11.6	0.3	57	115	32.0	571	165	3.1	16.7	5.6	4.4	2.2	0.8	1.0	nd	3.1	2.0	7.5	0.1	nd	nd	1.0	3.0	0.2
Btg2	40-70	29.8	0.4	62	95	39.7	499	366	4.3	30.5	4.9	6.4	4.3	1.1	1.4	nd	6.3	2.9	5.1	0.1	nd	nd	1.9	3.2	0.3
Btg3	70-90	38.6	0.5	71	107	39.6	431	97	3.2	15.8	5.2	6.4	4.5	0.7	1.9	nd	7.2	2.7	5.7	0.1	nd	nd	2.1	2.9	0.3
Btg4	90-112	48.7	0.7	80	123	49.5	597	108	4.5	34.6	5.9	7.3	5.4	1.3	2.4	nd	8.2	3.1	6.1	0.1	nd	nd	2.3	3.4	0.3
Btg5	112-140	41.4	0.4	69	105	41.0	402	81	3.0	14.8	5.1	5.4	4.4	1.0	1.9	nd	6.8	2.4	5.5	0.1	nd	nd	1.9	2.8	0.3
Btg6	140-170	38.7	0.5	59	108	42.9	462	85	3.7	26.6	5.2	5.3	4.1	1.5	1.0	0.2	6.4	2.3	4.8	0.1	nd	nd	1.8	2.8	0.3
Btg7	170-193	39.5	0.5	56	106	36.3	428	113	3.4	15.1	5.5	5.4	4.0	1.0	2.0	0.2	6.1	2.3	5.6	nd	nd	nd	1.7	4.1	0.3
Location 2 : Clayey textured salt affected soils *(Phimai series)*																								
Pedon 6 Typic Natraqualf; fine, kaolinitic, isohyperthemic																								
Apng1	0-10	19.7	1.2	176	205	76.9	290	531	9.4	29.2	12.8	33.1	12.9	3.9	6.3	0.2	35.8	21.7	nd	nd	nd	5.5	4.3	12.6	1.7
Apng2	10-20	28.0	1.5	71	151	67.6	171	385	10.0	24.9	10.6	28.6	16.5	1.7	1.8	nd	43.9	18.2	nd	nd	nd	2.4	5.7	11.7	1.5
Btng1	20-33	29.2	1.7	46	134	59.9	208	330	10.0	29.8	8.2	23.5	17.9	1.1	2.2	nd	31.8	18.1	nd	nd	nd	1.4	5.0	10.3	1.5
Btng2	33-48	23.8	1.1	28	111	53.9	274	106	6.8	21.4	6.2	19.7	17.0	1.2	1.5	0.1	21.0	16.3	nd	nd	nd	0.9	3.7	7.3	1.2
Btng3	48-70	26.1	1.3	24	142	53.9	251	157	8.5	27.9	5.9	30.1	24.1	1.5	1.5	nd	27.3	20.9	nd	nd	nd	0.9	4.5	8.1	0.8
Btng4	70-88	19.3	1.0	19	127	30.8	303	224	6.2	19.8	5.9	24.6	17.1	0.8	1.6	0.2	23.7	16.8	nd	nd	nd	0.9	3.4	5.9	0.4
2Btng5	88-114	17.8	0.9	23	154	39.3	307	297	7.0	26.7	6.5	21.5	13.8	1.1	0.8	0.2	21.2	14.5	nd	nd	nd	0.6	2.9	6.7	0.4
2Btng6	114-135	16.9	0.9	23	172	44.0	330	311	6.4	19.4	7.0	19.3	11.4	1.2	0.7	nd	19.5	13.2	nd	nd	nd	0.4	2.6	6.3	0.5
2Btng7	135-156	14.0	0.7	25	178	38.2	431	210	7.4	30.4	7.1	17.3	9.6	1.5	1.0	nd	16.7	11.8	0.6	nd	nd	0.5	2.1	6.9	0.4
2Btng8	156-190	11.6	0.7	27	186	36.0	389	430	6.5	18.5	6.9	13.9	6.1	1.3	nd	0.1	15.2	10.2	0.9	nd	nd	0.2	1.8	6.4	0.4

Appendix Table C11 (Continued)

Soil samples	Depth	Element concentrations (mg kg^{-1})																							
	(cm)	Li	Be	P	Ti	V	Cr	Mn	Co	Ni	Cu	Zn	Ga	As	Br	Se	Rb	Sr	Mo	Ag	Cd	I	Cs	Pb	U
Pedon 7 Typic Natraqualf; very fine, kaolinitic, isohyperthemic																									
Apg1	0-18	29.5	1.7	133	162	85.7	274	251	9.9	30.5	12.2	27.9	14.5	2.2	2.7	0.2	38.6	17.9	nd	nd	nd	0.6	5.0	13.6	1.6
Apg2	18-30	30.8	1.7	118	153	97.2	202	258	9.9	25.1	14.7	33.2	15.3	2.7	2.1	0.4	43.3	17.8	nd	nd	nd	0.8	5.4	16.5	1.9
Btg	30-42	31.8	1.7	103	164	100.4	231	226	10.5	29.4	13.4	30.6	16.2	2.3	1.8	0.2	41.3	16.4	nd	nd	nd	0.7	5.3	14.2	1.8
Btng1	42-53/64	36.8	2.4	65	180	97.3	143	269	10.7	26.0	14.1	32.8	18.4	1.5	1.0	nd	48.5	22.5	nd	nd	nd	0.8	6.2	17.4	2.2
Btng2	64-79	44.0	2.5	61	225	98.4	160	181	11.4	30.5	13.7	36.6	24.9	1.6	0.7	0.4	49.1	27.6	nd	nd	nd	0.6	6.8	16.3	2.2
Btng3	79-100	44.0	2.4	56	180	84.8	195	163	9.9	29.6	10.3	23.9	19.6	0.7	0.6	0.1	35.6	19.9	nd	nd	nd	0.8	6.4	14.4	2.2
Btng4	100-124	35.1	1.8	42	235	66.2	162	112	9.2	26.6	8.8	21.4	19.3	0.6	0.1	nd	33.5	18.2	nd	nd	nd	0.5	6.1	13.2	2.5
Btng5	124-151	27.0	1.4	24	169	52.7	258	188	9.2	26.2	10.1	23.6	17.2	0.9	nd	0.1	29.7	17.9	nd	nd	nd	0.3	5.2	11.2	1.4
2Btng6	151-176	18.9	1.0	23	186	42.8	229	110	6.7	22.4	7.7	22.3	13.9	0.9	nd	nd	26.2	16.4	nd	nd	nd	0.4	4.2	8.0	0.9
2Btng7	176-200	12.9	0.8	22	156	33.7	386	77	5.8	24.0	7.2	16.0	9.2	1.2	nd	nd	18.7	11.7	0.4	nd	nd	0.4	2.9	6.9	0.6
Pedon 8 Typic Natraqualf; fine, kaolinitic, isohyperthemic																									
Apg	0-11	24.8	1.4	133	136	72.7	181	162	8.7	23.4	12.1	27.3	15.8	1.7	2.2	nd	37.2	18.8	nd	nd	nd	0.8	5.1	13.0	1.8
Btg1	11-32	35.1	1.9	88	142	80.9	152	256	11.9	28.4	12.5	30.3	20.7	1.3	1.1	nd	44.9	18.7	nd	nd	nd	0.7	7.0	15.6	2.2
Btg2	32-56	36.9	1.9	53	188	74.8	150	200	10.0	27.5	10.5	24.7	20.6	0.8	0.2	nd	35.0	20.2	nd	nd	nd	0.5	6.6	14.3	2.4
Btng1	56-65/85	37.1	1.7	38	163	66.6	167	124	9.0	25.4	8.5	24.5	22.7	0.9	0.5	0.1	30.7	23.5	nd	nd	nd	0.4	5.6	11.9	2.5
Btng2	85-110	33.8	1.7	32	143	72.0	171	263	9.6	26.3	9.8	23.0	20.6	1.0	0.2	0.1	29.6	21.1	nd	nd	nd	0.3	5.9	12.4	2.0
Btng3	110-124	41.0	1.9	35	201	75.2	234	149	9.1	27.7	10.5	21.5	18.7	0.8	0.4	nd	30.4	19.9	nd	nd	nd	0.7	6.3	12.1	1.7
2Btng4	124-152	38.7	2.7	33	122	103.5	114	610	27.0	31.8	21.0	37.3	25.7	1.8	0.6	nd	50.4	30.3	nd	nd	nd	0.8	8.2	28.9	2.2
2Btng5	152-180+	30.5	2.3	30	126	86.5	179	480	21.4	29.8	18.8	34.3	22.1	2.0	0.1	nd	44.4	25.8	nd	nd	nd	0.8	6.8	24.0	1.8
Pedon 9 Typic Endoaqualf; fine, kaolinitic, isohyperthemic																									
Apg1	0-10	19.4	1.3	128	141	83.3	296	209	10.0	25.2	12.5	23.3	13.6	3.5	2.7	0.1	29.3	15.5	0.1	nd	nd	0.8	4.0	12.1	1.5
Apg2	10-22	17.6	1.1	74	127	69.7	251	245	8.7	21.7	10.6	21.1	12.6	2.9	1.2	0.1	26.8	13.2	nd	nd	nd	0.3	3.7	10.5	1.3
Btg1	22-38	20.9	1.3	61	115	69.4	293	268	9.4	27.2	11.4	23.2	14.3	2.0	0.3	nd	30.1	14.3	nd	nd	nd	0.4	4.4	11.3	1.5
Btg2	38-60	28.9	1.5	53	158	62.1	180	219	9.9	25.2	9.3	23.3	17.1	1.3	nd	0.1	33.0	16.0	nd	nd	nd	0.3	5.3	11.1	1.7
Btg3	60-83	30.3	1.5	37	129	57.0	191	174	8.5	26.1	8.4	22.7	16.8	0.9	0.1	nd	27.7	19.3	nd	nd	nd	0.2	5.0	9.4	1.4
Btg4	83-102	25.5	1.4	34	171	52.9	193	204	9.0	25.0	9.7	26.5	15.6	1.2	nd	0.2	27.5	24.7	nd	nd	nd	0.3	4.5	9.3	1.0
2Btg5	102-121	20.7	1.1	32	239	53.6	208	174	8.5	24.8	10.4	27.9	13.6	1.8	nd	nd	26.4	26.0	nd	nd	nd	0.4	3.8	8.7	0.8
2Btg6	121-140	15.3	0.9	29	263	49.3	255	839	10.5	24.2	10.1	33.0	16.2	2.2	nd	0.1	23.1	25.1	nd	nd	nd	0.4	2.9	9.1	0.7
2Btg7	140-162	12.5	0.8	34	252	43.5	263	825	9.8	22.4	10.1	29.9	12.2	1.8	nd	nd	21.2	21.5	nd	nd	nd	0.4	2.4	8.7	0.6
2Btg8	162-190	10.6	0.7	40	277	39.7	327	461	10.9	23.3	9.9	36.6	18.5	1.9	nd	0.1	19.8	24.2	nd	nd	nd	0.4	2.2	8.2	0.5

Appendix Table C11 (Continued)

Soil samples	Depth	Element concentrations (mg kg^{-1})																						
	(cm)	Li	Be	P	Ti	V	Cr	Mn	Co	Ni	Cu	Zn	Ga	As	Br	Se	Rb	Sr	Mo	Ag	Cd	I	Cs	Pb	U
Pedon 10 Typic Natraqualf; fine, kaolinitic, isohyperthemic																								
Apg	0-16	15.9	1.1	175	167	70.2	308	314	8.0	24.7	13.1	28.6	11.6	3.2	6.6	0.3	24.0	14.0	0.1	nd	nd	5.5	3.5	11.3	1.6
Btg1	16-31	23.0	1.4	91	141	78.0	260	193	9.1	24.5	13.1	27.8	15.2	2.2	4.6	0.1	35.1	13.9	nd	nd	nd	2.3	4.7	12.8	1.6
Btg2	31-52	26.4	1.7	74	158	84.5	224	223	10.5	25.0	14.1	27.9	15.8	2.1	3.8	0.5	41.1	15.4	nd	nd	nd	2.8	5.4	15.4	2.0
Btg3	52-69	29.9	1.6	67	129	80.9	234	198	10.6	25.9	14.1	28.1	16.6	2.1	3.2	0.1	40.7	17.1	nd	nd	nd	2.5	5.7	14.5	2.0
Btg4	69-95	33.1	2.0	54	161	68.7	154	116	9.0	25.0	12.3	23.7	17.7	0.7	2.1	0.4	32.9	17.8	nd	nd	nd	2.1	6.0	13.8	2.3
2Btng1	95-128	35.9	1.7	42	206	65.1	149	71	8.4	24.0	10.0	20.7	17.9	0.5	1.2	nd	26.3	18.0	nd	nd	nd	1.0	5.7	12.7	2.5
2Btng2	128-161	33.2	1.7	30	166	58.8	134	181	8.2	22.4	9.2	20.3	17.2	0.6	1.7	nd	25.8	20.2	nd	nd	nd	0.5	5.4	11.0	1.6
2Btng3	161-187	22.9	1.6	35	219	75.1	148	966	17.5	25.6	15.1	42.0	19.0	2.1	1.5	nd	34.4	28.8	nd	nd	nd	0.8	4.3	15.7	1.5
2Btng4	187-210+	18.4	1.2	37	223	60.8	183	649	15.4	22.7	12.9	34.5	12.9	1.6	2.6	nd	27.7	22.4	nd	nd	nd	1.1	3.3	12.2	1.0
Location 3 : Sandy over clayey textures salt affected soils *(Kula Ronghai series)*																								
Pedon 11 Typic Natraqualf; fine, kaolinitic, isohyperthemic																								
Apg	0-15/23	4.9	0.3	50	91	22.5	389	236	7.6	18.1	5.5	7.3	4.5	0.9	3.7	nd	3.4	3.1	1.7	nd	nd	0.2	1.0	3.3	0.4
Bcg	23-46	19.7	1.3	21	129	53.8	164	1343	26.2	20.6	4.4	18.9	17.5	1.0	2.6	nd	13.2	17.5	nd	nd	nd	0.2	4.2	12.8	0.8
Btg1	46-65	24.2	1.4	17	180	41.7	204	201	8.9	24.4	4.7	15.3	13.5	0.1	3.3	nd	16.4	20.0	nd	nd	nd	0.6	4.8	7.4	0.5
Btg2	65-88	18.4	0.9	13	204	38.2	175	74	6.8	18.3	4.1	11.2	11.0	0.5	1.1	nd	12.3	15.3	nd	nd	nd	0.7	3.7	5.5	0.4
Btg3	88-113	16.3	0.6	12	239	45.2	229	32	5.2	18.6	5.9	10.2	9.8	0.8	2.1	nd	9.4	12.8	nd	nd	nd	0.9	2.9	4.7	0.5
2Btng1	113-140	13.7	0.5	15	248	48.4	235	28	4.4	16.1	7.0	7.9	8.0	1.0	2.3	nd	7.8	10.5	nd	nd	nd	1.0	2.5	4.3	0.5
2Btng2	140-172	13.0	0.5	15	273	37.5	293	26	4.2	18.2	6.4	7.7	7.8	0.7	3.0	nd	7.9	9.7	nd	nd	nd	0.8	2.5	4.1	0.5
2Btng3	172-205+	12.9	0.4	15	294	31.6	345	31	4.6	18.6	6.7	8.0	8.4	0.4	0.6	nd	10.0	11.0	nd	nd	nd	0.3	3.0	3.6	0.4
Pedon 12 Typic Natraqualf; fine, kaolinitic, isohyperthemic																								
Apg	0-19/20	2.8	0.1	39	105	12.6	346	37	2.5	15.0	4.2	3.1	2.2	0.6	4.1	nd	1.5	1.9	0.3	nd	nd	0.1	0.6	1.8	0.2
Apng	20-27/32	1.7	0.1	15	99	11.6	761	41	3.3	29.6	6.3	2.3	1.3	0.8	1.4	nd	0.7	1.1	4.0	nd	nd	nd	0.3	1.2	0.2
Bcg	32-54/63	20.0	1.0	20	130	42.9	248	967	12.6	23.8	5.7	14.8	12.3	1.2	0.9	0.1	10.4	12.2	nd	nd	nd	0.1	3.3	9.3	0.7
Btg1	63-82/87	21.7	1.2	16	149	31.9	272	173	7.4	23.6	4.4	15.7	13.6	0.4	1.1	0.0	13.7	17.3	nd	nd	nd	0.1	4.1	7.1	0.5
Btg2	87-111/114	16.1	0.7	13	180	36.4	198	44	4.8	18.2	4.1	10.7	10.3	0.5	1.2	nd	10.9	15.4	nd	nd	nd	0.3	3.1	4.7	0.4
2Btg3	114-137	14.3	0.8	16	243	71.0	228	38	5.0	17.1	8.7	10.4	10.4	2.0	1.9	nd	8.9	13.4	nd	nd	nd	0.6	2.6	6.6	0.7
2Btg4	137-155	13.9	0.6	15	245	41.1	201	24	3.6	14.9	6.6	9.3	9.3	0.8	0.2	nd	8.8	12.1	nd	nd	nd	0.3	2.4	4.0	0.5
2Btng1	155-183	11.9	0.5	15	265	38.5	298	22	3.1	16.1	5.4	7.3	8.0	0.5	0.3	nd	7.3	10.9	nd	nd	nd	0.3	2.2	3.9	0.5
2Btng2	183-207+	11.2	0.4	12	238	36.0	279	22	2.9	15.7	5.9	6.8	7.3	0.6	1.1	nd	7.0	9.6	nd	nd	nd	0.3	2.1	3.5	0.4

Appendix Table C11 (Continued)

Soil samples	Depth	Element concentrations (mg kg^{-1})																							
	(cm)	Li	Be	P	Ti	V	Cr	Mn	Co	Ni	Cu	Zn	Ga	As	Br	Se	Rb	Sr	Mo	Ag	Cd	I	Cs	Pb	U
Pedon 13	Typic Endoaqualf; fine, kaolinitic, isohyperthemic																								
Apg1	0-18	3.0	0.1	45	112	16.0	629	50	3.1	24.5	5.4	3.6	2.3	0.7	1.9	nd	1.7	2.0	3.1	nd	nd	0.1	0.6	1.9	0.2
Apg2	18-30	2.1	0.1	23	97	20.3	652	45	2.9	23.6	8.0	2.9	2.0	1.1	0.3	nd	1.1	1.5	5.0	nd	nd	nd	0.4	2.0	0.2
Btg1	30-48	25.9	1.0	28	114	42.4	292	376	14.7	27.6	4.8	14.5	12.7	0.8	0.9	0.2	13.7	11.6	nd	nd	nd	nd	4.8	10.4	1.0
Btg2	48-73	23.9	1.1	20	131	38.1	208	145	9.2	24.0	10.7	18.8	13.1	0.5	0.5	nd	15.1	14.0	nd	nd	nd	nd	4.9	8.7	0.8
Btg3	73-91	17.1	0.9	14	190	37.1	227	119	12.8	18.6	4.9	11.1	10.8	0.5	0.2	0.2	11.3	12.6	nd	nd	nd	0.3	3.5	7.8	0.6
2Btg4	91-118	12.4	0.9	14	213	44.1	191	141	13.4	15.4	6.1	8.5	9.7	0.8	0.6	nd	8.2	10.9	nd	nd	nd	0.2	2.7	11.5	0.5
2Btg5	118-150	12.8	0.8	17	250	51.5	297	81	8.2	18.0	7.7	8.6	9.8	1.0	nd	nd	7.5	10.6	nd	nd	nd	0.1	2.5	8.7	0.6
2Btg6	150-185	17.9	1.1	22	285	64.3	187	67	9.5	16.3	8.8	11.5	12.2	1.0	nd	nd	11.0	13.3	nd	nd	nd	0.1	3.5	6.6	0.8
2Btg7	185-210+	18.1	1.4	28	303	88.5	167	51	6.7	15.3	9.3	11.4	12.4	2.0	nd	0.1	10.5	13.3	nd	nd	nd	0.2	3.3	7.3	1.2
Pedon 14	Typic Natraqualf; fine-loamy, mixed,active, isohyperthemic																								
Apg	0-28	3.4	0.2	65	107	20.6	492	40	2.9	19.0	6.7	4.1	2.6	0.8	1.7	0.2	1.8	2.5	3.1	nd	nd	0.3	0.7	2.8	0.4
Bng	28-44	2.9	0.1	25	110	13.9	521	104	3.0	21.1	4.6	3.6	2.0	0.6	nd	nd	1.2	2.1	2.3	nd	nd	nd	0.6	3.4	0.3
Bcg	44-66	29.3	1.4	23	126	66.4	289	1291	27.7	31.9	5.9	21.6	17.8	1.7	nd	nd	15.9	19.7	0.4	nd	nd	0.3	4.8	14.7	0.9
Btng1	66-85	21.4	1.3	22	133	70.7	361	694	22.1	28.7	5.8	17.3	13.6	2.4	nd	0.1	15.6	15.7	1.1	nd	nd	0.4	4.1	12.2	0.7
Btng2	85-110	20.6	1.0	19	173	59.2	245	228	11.7	22.9	4.9	13.8	11.6	1.4	nd	nd	14.3	14.7	0.1	nd	nd	0.2	3.9	7.7	0.6
Btng3	110-137	19.1	0.9	17	206	37.8	274	102	7.7	21.0	5.2	11.3	10.2	0.5	nd	nd	12.6	13.6	nd	nd	nd	0.2	3.5	4.5	0.4
2Btng4	137-161	14.6	0.7	15	236	44.5	225	39	4.7	15.8	6.7	8.2	8.6	0.9	0.4	nd	6.9	10.0	nd	nd	nd	0.1	2.0	3.9	0.5
2Btng5	161-183	12.0	0.7	13	207	32.0	288	63	5.3	16.8	6.8	7.5	7.9	0.4	nd	nd	6.6	9.3	0.2	nd	nd	nd	1.9	4.1	0.4
2Btg	183-206+	15.1	0.8	19	265	44.4	271	35	4.5	16.9	6.4	7.7	8.6	0.9	nd	nd	6.6	9.4	0.2	nd	nd	0.1	2.0	3.9	0.5
Pedon 15	Typic Natraqualf; fine, kaolinitic, isohyperthemic																								
Apg	0-15	2.7	0.1	86	104	12.9	368	230	3.4	17.5	4.8	8.4	2.2	1.3	5.5	0.1	1.5	2.6	3.8	nd	nd	3.8	0.6	3.7	0.5
Bcg	15-50	18.5	1.0	11	100	34.4	216	286	8.9	21.3	3.7	12.1	10.2	0.7	3.1	0.4	12.7	16.3	1.9	nd	nd	1.4	4.2	6.5	0.5
Btg1	50-70	19.8	1.0	9	152	34.8	228	160	7.2	21.4	4.2	13.8	11.3	0.7	0.8	0.3	14.2	16.3	1.6	nd	nd	1.2	4.1	6.0	0.4
Btg2	70-90	14.9	0.8	7	146	35.3	181	76	7.1	17.1	3.5	8.6	7.5	1.0	1.9	0.4	11.4	13.7	1.4	nd	nd	1.7	3.3	4.7	0.4
Btg3	90-110	14.7	0.8	8	197	35.6	220	127	10.1	17.2	4.5	8.9	8.0	0.8	1.8	nd	10.9	12.8	1.5	nd	nd	1.3	3.0	5.7	0.4
2Btg4	110-130	12.0	0.9	8	198	42.2	197	268	11.2	15.0	5.4	8.8	8.5	1.0	1.9	0.2	7.6	10.6	1.8	nd	nd	0.8	2.2	8.3	0.6
2Btng1	130-153	11.0	1.1	10	197	42.0	226	77	4.4	14.5	5.4	7.5	7.4	1.0	3.4	0.2	6.4	9.6	1.9	nd	nd	0.4	2.0	4.8	0.6
2Btg5	153-182	13.5	1.2	18	240	66.3	214	81	4.7	15.9	9.0	8.4	7.9	2.5	2.2	nd	6.8	9.4	2.2	nd	nd	0.5	2.1	5.9	0.9
2Btng2	182-200	12.4	0.6	10	198	38.4	227	44	3.9	14.0	6.0	6.6	6.5	1.1	1.1	nd	5.9	8.7	1.7	nd	nd	0.2	2.0	4.3	0.5

Appendix Table C11 (Continued)

Soil samples	Depth	Element concentrations (mg kg^{-1})																							
	(cm)	Li	Be	P	Ti	V	Cr	Mn	Co	Ni	Cu	Zn	Ga	As	Br	Se	Rb	Sr	Mo	Ag	Cd	I	Cs	Pb	U
Pedon 16 Typic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic																									
Apg1	0-16/18	1.9	0.1	31	71	10.2	484	36	2.3	18.7	4.4	2.7	1.5	0.7	3.3	0.3	0.9	1.6	6.1	nd	nd	0.2	0.4	1.5	0.2
Apg2	18-21/28	1.8	0.1	10	66	10.8	593	33	2.5	23.2	4.9	2.2	1.3	0.9	1.4	nd	0.7	1.1	6.2	nd	nd	0.1	0.3	1.4	0.2
Bcng	28-47/57	24.8	1.4	18	110	55.8	243	2863	53.4	26.8	6.8	24.4	19.7	1.9	1.4	0.3	13.2	18.1	3.6	nd	nd	0.8	4.7	19.5	0.8
Btng1	57-72	21.7	1.1	10	151	36.7	281	226	9.9	24.5	6.9	13.7	9.7	0.7	0.2	nd	14.4	15.8	2.3	nd	nd	0.3	4.6	6.0	0.4
Btng2	72-94	17.3	1.0	7	153	29.5	242	81	6.2	20.0	5.7	10.8	8.7	0.5	0.2	nd	12.2	13.9	2.2	nd	nd	0.7	3.7	3.7	0.4
Btng3	94-113	14.6	0.9	9	186	31.6	263	645	11.4	19.6	5.6	13.3	11.3	0.7	1.7	0.3	9.3	13.3	2.1	nd	nd	0.6	2.9	9.7	0.4
2Btng4	113-138	12.2	0.9	7	190	29.2	219	175	6.9	16.4	4.7	7.3	7.1	0.8	1.1	0.2	7.0	9.6	2.1	nd	nd	0.4	2.3	4.3	0.4
2Btg	138-169	11.9	0.8	9	198	27.7	336	79	5.4	19.3	8.3	8.8	6.4	0.8	2.1	nd	6.0	8.5	3.0	nd	nd	0.1	2.1	5.8	0.4
2Btng5	169-202+	14.4	0.6	6	227	34.1	305	39	3.9	17.8	5.8	6.3	6.5	0.9	0.1	0.1	5.6	8.7	3.0	nd	nd	0.1	2.0	5.1	0.5
Location 4 : Calyey textured salt affected soils *(Udon series)*																									
Pedon 17 Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic																									
Ang	0-20	32.4	1.7	133	192	78.6	126	516	11.1	19.6	14.3	32.3	13.1	2.1	2.2	nd	58.3	51.0	1.4	nd	nd	1.1	5.2	16.8	1.4
ABng	20-36	29.6	1.4	94	211	68.2	141	315	9.8	18.3	12.2	27.2	12.3	1.6	0.6	nd	53.8	36.9	1.6	nd	nd	0.7	5.4	14.5	1.3
Btng1	36-60	22.9	1.1	44	196	51.6	213	98	6.2	16.4	8.9	15.8	9.3	1.4	1.5	nd	33.7	19.8	2.1	nd	nd	0.3	4.2	9.3	1.2
Btng2	60-85	25.6	1.2	34	181	53.2	197	123	8.7	16.0	8.6	14.1	9.3	0.8	1.1	nd	32.4	19.4	2.3	nd	nd	0.5	4.4	11.4	1.3
Btng3	85-110	27.5	1.2	27	207	49.1	220	84	6.6	18.2	7.2	15.8	11.4	1.1	0.5	0.5	25.4	19.3	2.1	nd	nd	0.3	4.5	9.8	1.4
Btng4	110-130	38.6	0.9	26	166	49.4	178	63	5.2	15.6	8.5	13.9	10.8	0.9	0.2	0.1	23.7	22.4	4.3	nd	nd	0.3	4.9	9.7	1.6
Bssg1	130-165	22.3	1.1	39	93	69.7	111	75	4.5	13.4	10.9	26.8	15.6	1.3	1.2	nd	46.4	39.7	0.9	nd	nd	0.7	5.8	12.8	1.5
Bssg2	165-200+	15.0	1.5	83	76	77.9	84	81	5.0	13.8	14.5	32.4	17.1	1.6	1.6	0.1	54.4	45.9	0.7	nd	nd	2.1	5.8	14.8	1.4
Pedon 18 Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic																									
Ang	0-19	34.4	1.8	107	240	79.1	170	340	10.3	20.8	15.4	30.4	13.5	2.1	2.1	0.3	59.8	43.4	1.8	nd	nd	1.4	6.1	16.1	1.5
Btng1	19-43	34.4	1.3	56	200	56.7	167	181	8.5	17.8	9.3	18.8	11.9	1.4	nd	0.1	36.6	23.8	1.9	nd	nd	0.5	5.3	11.6	1.6
Btng2	43-64	40.2	1.3	42	224	52.2	180	106	7.2	18.4	8.6	15.3	11.5	0.7	0.1	nd	29.8	20.4	1.6	nd	nd	0.3	5.4	10.8	1.9
Btng3	64-94	29.8	1.1	25	174	45.6	149	65	5.0	13.2	7.1	11.9	9.3	0.7	nd	0.2	22.0	20.5	1.5	nd	nd	0.1	4.4	9.0	1.6
Btng4	94-113	24.6	0.9	23	179	43.9	150	53	3.8	12.0	6.8	13.4	10.4	0.8	0.2	0.3	20.2	24.1	1.2	nd	nd	0.1	4.2	9.0	1.3
Btgn5	113-140	19.3	0.8	21	210	44.7	181	52	3.3	11.5	6.5	13.4	10.1	0.6	nd	nd	19.4	22.5	1.8	nd	nd	0.2	4.0	9.2	1.0
2Btg	140-169	9.1	0.6	14	197	34.4	274	55	3.5	14.5	5.9	11.6	7.5	0.8	nd	0.3	15.2	16.5	2.7	nd	nd	0.6	2.5	7.6	0.5
2Btng6	169-195+	14.0	1.3	23	162	71.9	201	230	14.1	14.9	9.7	23.3	15.0	1.6	nd	nd	32.3	31.5	2.3	nd	nd	1.4	4.5	27.8	0.9

Appendix Table C11 (Continued)

Soil samples	Depth	Element concentrations (mg kg^{-1})																							
	(cm)	Li	Be	P	Ti	V	Cr	Mn	Co	Ni	Cu	Zn	Ga	As	Br	Se	Rb	Sr	Mo	Ag	Cd	I	Cs	Pb	U
Pedon 19	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic																								
Ang	0-19	28.6	1.4	76	207	64.6	175	298	8.8	17.7	11.9	22.7	11.0	1.9	0.8	nd	46.8	31.3	1.8	nd	nd	0.8	5.0	13.5	1.3
Btng1	19-38	29.7	1.2	47	207	57.2	152	163	7.9	16.1	8.9	17.7	10.9	1.2	nd	0.2	38.8	20.8	1.7	nd	nd	0.6	5.1	10.4	1.4
Btng2	38-56	37.1	1.4	42	180	58.6	201	211	10.3	21.3	8.8	18.7	12.7	1.5	nd	nd	38.3	21.2	2.1	nd	nd	0.4	5.8	12.3	1.6
Btng3	56-77	47.4	1.2	30	174	45.9	224	154	8.2	20.7	7.0	14.3	11.3	1.3	nd	nd	25.1	18.7	2.8	nd	nd	0.2	5.0	10.0	1.4
2Btng4	77-100	29.7	0.7	17	129	21.3	294	58	3.8	17.0	3.9	9.1	7.2	0.7	nd	nd	14.1	12.3	3.0	nd	nd	nd	3.0	5.0	0.7
2Btng5	100-119	11.1	0.3	16	104	18.4	494	50	2.9	19.6	4.5	7.0	4.9	1.0	nd	0.2	8.3	8.6	6.5	nd	nd	0.1	1.5	4.1	0.3
2Btng6	119-146	4.5	0.2	13	75	14.9	625	74	4.7	21.2	5.1	4.5	2.6	1.4	nd	0.5	4.3	6.2	7.1	nd	nd	0.2	0.7	6.8	0.3
2Btng7	146-175	6.4	0.4	13	121	16.8	385	179	6.9	16.9	5.2	6.6	3.0	0.8	nd	nd	8.8	10.5	5.1	nd	nd	0.4	1.3	7.5	0.6
2Btng8	175-210+	8.8	0.9	39	146	31.3	434	155	4.8	19.9	6.1	10.6	5.0	1.5	nd	0.1	12.4	14.9	5.4	nd	nd	0.4	1.8	9.4	1.0
Pedon 20	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic																								
Ang	0-20	33.6	1.6	125	299	77.7	247	279	10.0	23.6	15.3	34.7	13.5	2.4	4.1	0.5	58.2	44.2	3.6	nd	nd	1.9	6.3	17.0	2.2
Btng1	20-44	39.4	1.5	59	250	65.4	195	170	9.6	21.3	10.4	21.9	13.2	1.6	1.8	0.3	47.0	27.5	2.0	nd	nd	1.2	6.4	12.8	2.0
Btng2	44-66	51.2	2.0	56	225	70.2	254	238	11.5	24.0	10.2	21.2	14.5	1.2	2.9	nd	43.2	30.6	3.0	nd	nd	1.9	7.1	15.0	2.9
Btng3	66-89	41.3	1.5	38	189	55.9	176	151	8.0	17.9	7.8	25.1	19.1	0.8	2.4	0.3	29.4	30.5	1.7	nd	nd	1.4	5.8	12.4	2.6
Btng4	89-113	35.3	1.3	31	212	45.2	196	111	5.9	15.7	7.3	21.3	15.5	1.0	1.5	0.5	27.2	28.5	2.1	nd	nd	0.9	5.2	10.5	2.0
Btng5	113-139	17.7	0.8	22	165	39.6	262	173	8.4	16.5	6.3	14.8	9.0	1.2	nd	nd	22.6	22.7	2.6	nd	nd	1.4	3.6	14.0	1.0
Btng6	139-171	21.1	1.4	37	150	65.5	223	832	24.5	17.4	9.9	21.6	11.9	1.9	nd	0.1	40.0	36.7	2.7	nd	nd	1.0	5.2	19.7	1.2
Btng7	171-200+	21.2	2.3	72	119	74.7	80	350	7.5	17.0	16.6	34.5	15.1	2.3	0.5	0.1	61.4	53.4	0.8	nd	nd	0.5	6.5	15.5	1.8
Pedon 21	Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic																								
Ang	0-18	31.9	1.7	112	196	70.2	118	269	9.2	17.7	13.2	29.4	12.7	1.8	1.7	nd	58.5	43.7	1.4	nd	nd	0.7	5.9	15.7	1.6
Btng1	18-45	33.1	1.6	73	216	72.2	163	137	7.3	18.4	12.3	28.3	13.4	1.5	1.7	0.2	61.3	34.5	1.5	nd	nd	0.5	6.7	15.0	1.7
Btng2	45-68	30.7	1.3	42	180	58.1	127	85	6.1	14.6	9.0	18.9	10.4	1.1	nd	nd	43.1	24.2	1.4	nd	nd	0.2	5.5	11.0	1.4
Btng3	68-89	33.5	1.4	39	222	56.6	132	84	6.7	16.5	8.0	19.4	12.2	1.1	0.1	0.3	39.4	25.8	1.3	nd	nd	0.3	5.7	12.0	1.6
Btng4	89-112	31.9	1.2	32	168	57.4	131	73	5.5	13.7	7.8	19.6	13.5	1.3	nd	nd	34.3	32.2	1.4	nd	nd	0.3	5.4	11.6	1.6
Btng5	112-137	28.2	1.2	43	134	65.3	114	85	5.5	13.9	9.6	23.0	14.0	1.5	0.4	nd	45.9	42.2	1.1	nd	nd	0.3	6.2	11.9	1.6
Btng6	137-161	24.0	1.5	60	121	77.8	103	105	5.9	14.4	12.7	29.2	16.1	1.7	nd	nd	58.4	50.2	1.1	nd	nd	0.6	6.8	15.1	1.7
Btng7	161-200+	22.6	2.1	97	133	86.8	75	135	7.3	16.5	17.8	39.2	18.8	1.7	0.4	nd	72.5	61.1	0.7	nd	nd	1.0	7.7	21.3	2.1

Appendix Table C11 (Continued)

Soil samples	Depth	Element concentrations (mg kg^{-1})																						
	(cm)	Li	Be	P	Ti	V	Cr	Mn	Co	Ni	Cu	Zn	Ga	As	Br	Se	Rb	Sr	Mo	Ag	Cd	I	Cs	Pb	U
Pedon 22 Vertic Natraqualf; fine-loamy, mixed, semiactive, isohyperthemic																								
Ang	0-21	23.4	1.3	88	148	60.1	145	161	6.6	14.4	10.0	20.5	9.9	1.7	1.4	0.1	41.3	33.1	1.9	nd	nd	0.6	4.6	12.0	1.3
Btng1	21-41	27.0	1.2	51	186	60.1	158	96	5.8	15.3	9.9	19.0	10.2	1.2	0.1	0.1	41.7	23.0	1.7	nd	nd	0.3	5.3	10.6	1.3
Btng2	41-66	26.1	1.2	35	169	55.9	173	88	6.0	15.7	9.2	17.5	10.2	1.4	nd	nd	36.9	23.5	2.1	nd	nd	0.2	5.1	10.1	1.3
Btng3	66-88	29.7	1.5	34	157	61.1	143	167	7.6	16.9	9.8	24.6	15.3	1.2	nd	0.3	43.7	44.1	1.3	nd	nd	0.8	6.1	13.2	1.5
Btng4	88-108	33.5	2.3	39	109	78.1	115	268	10.9	18.8	13.7	32.1	18.6	1.7	0.5	nd	59.6	61.0	1.0	nd	nd	1.6	7.5	17.5	1.6
Btng5	108-132	28.8	2.2	36	82	71.2	75	219	9.4	16.9	14.6	33.3	18.0	1.4	nd	nd	64.3	61.5	0.4	nd	nd	1.6	7.5	16.5	1.5
Btng6	132-165	26.6	1.9	51	90	95.8	57	158	6.8	18.5	21.6	39.8	19.1	2.7	nd	nd	74.5	69.1	0.4	nd	nd	2.0	7.9	18.5	1.8
Btng7	165-184	25.3	2.1	76	105	94.5	52	261	9.2	18.5	19.8	40.0	19.0	2.6	nd	0.4	69.9	64.8	0.6	nd	nd	1.6	7.2	21.1	2.2
Btng8	184-202+	31.2	2.6	82	122	103.3	70	205	8.3	21.2	22.3	50.1	23.1	2.3	nd	nd	85.5	75.1	0.7	nd	nd	1.0	8.5	21.2	2.5
Location 5 : Sandy textured salt affected soils *(Roi Et, saline variant 2)*																								
Pedon 23 Typic Natraqualf; sandy, silicious, subactive, isohyperthemic																								
Apng	0-11	2.0	0.1	17	43	13.1	695	66	2.7	24.6	10.0	5.5	1.3	1.5	nd	0.5	2.7	3.4	10.2	nd	nd	0.5	0.4	1.7	0.2
Bng1	11-30	0.8	nd	10	36	9.3	647	33	2.2	23.5	8.2	3.5	0.5	1.2	nd	0.2	0.8	1.0	7.7	nd	nd	0.1	0.1	1.0	0.1
Bng2	30-47	1.2	nd	10	39	10.3	649	32	2.2	23.4	5.6	1.5	0.5	1.2	nd	0.1	0.6	1.0	9.9	nd	nd	0.1	0.1	0.8	0.1
Btng1	47-69	2.1	nd	16	45	14.2	745	35	2.8	27.2	5.6	1.8	0.6	1.9	nd	0.2	0.9	1.4	8.7	nd	nd	0.1	0.2	1.1	0.2
Btng2	69-95	18.4	0.2	20	60	20.6	596	172	4.6	24.9	5.2	4.1	2.4	2.1	nd	nd	5.8	3.2	8.8	nd	nd	0.3	1.0	4.4	0.3
Btng3	95-110	30.6	0.4	22	64	23.9	586	276	5.5	27.1	4.7	5.6	3.2	2.5	nd	0.1	7.6	4.0	6.9	nd	nd	0.2	1.2	4.5	0.2
Btng4	110-130	11.4	0.4	16	77	20.9	527	228	4.2	22.3	5.1	5.9	2.9	2.0	nd	0.3	10.7	4.1	7.7	nd	nd	nd	1.3	3.5	0.2
Btng5	130-153	9.4	0.5	31	94	52.7	505	884	8.9	24.5	5.3	9.7	5.0	5.4	nd	nd	11.9	5.6	7.2	nd	nd	nd	1.4	6.5	0.3
2Btng6	153-178	15.8	0.6	17	110	27.4	405	381	5.3	21.6	4.9	10.3	5.2	1.8	nd	0.1	24.1	6.4	5.5	nd	nd	0.1	2.5	3.8	0.3
2Btng7	178-200+	19.0	0.8	62	139	39.1	365	290	5.7	20.9	4.5	13.7	5.8	1.9	nd	nd	32.4	7.4	4.4	nd	nd	nd	3.0	3.8	0.4
Pedon 24 Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																								
Apng	0-12	3.4	0.1	26	59	13.4	524	87	3.2	20.6	5.0	3.2	1.5	1.3	nd	0.1	4.5	3.0	7.8	nd	nd	0.1	0.7	2.1	0.2
Btng1	12-30	8.8	0.3	18	83	16.6	509	110	4.0	22.4	4.3	3.9	2.6	1.5	nd	0.4	6.9	3.7	5.7	nd	nd	0.5	1.4	2.7	0.3
Btng2	30-53	10.6	0.5	18	84	22.9	496	635	6.2	22.4	4.6	6.7	4.4	2.8	nd	0.4	6.9	4.7	6.9	nd	nd	0.3	1.3	9.7	0.3
Btng3	53-73	6.1	0.4	13	82	13.1	521	173	3.5	20.4	4.2	4.4	2.6	1.3	nd	0.1	8.3	3.9	5.7	nd	nd	0.1	1.2	2.6	0.1
Btng4	73-100	10.5	0.5	18	92	37.8	396	1564	10.4	22.2	4.7	13.1	8.8	3.1	nd	Nd	18.6	7.7	5.5	nd	nd	0.2	2.0	10.8	0.3
Btng5	100-128	11.6	0.7	18	79	23.0	401	557	10.4	20.4	3.8	7.8	4.9	2.2	nd	0.1	19.3	5.9	4.2	nd	nd	nd	2.1	4.9	0.2
2Btng6	128-155	14.0	0.7	30	93	26.7	364	390	5.6	19.8	4.3	12.4	7.0	2.0	nd	Nd	23.7	7.0	4.7	nd	nd	0.1	2.5	3.5	0.3
2Crtng	155-200+	17.1	1.0	282	234	73.1	188	583	8.0	20.4	4.9	25.7	9.8	3.1	0.9	nd	45.2	22.3	2.4	nd	0.1	0.2	4.2	4.8	0.6

Appendix Table C11 (Continued)

Soil samples	Depth	Element concentrations (mg kg^{-1})																							
	(cm)	Li	Be	P	Ti	V	Cr	Mn	Co	Ni	Cu	Zn	Ga	As	Br	Se	Rb	Sr	Mo	Ag	Cd	I	Cs	Pb	U
Pedon 25	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																								
Apg	0-17/30	4.3	0.3	91	169	14.5	573	76	3.5	24.4	7.5	12.2	1.9	2.6	1.6	0.1	3.1	7.1	8.4	nd	nd	0.4	0.7	4.1	0.8
Bg	17-30	2.8	0.1	15	74	12.3	750	50	3.7	31.1	6.3	3.0	1.5	1.3	1.4	nd	2.6	1.7	8.1	nd	nd	0.1	0.5	1.6	0.1
Btng1	30-52	6.9	0.3	11	114	15.6	519	79	4.2	23.1	4.8	4.3	3.1	1.2	0.5	nd	6.3	4.1	6.6	nd	nd	0.2	1.3	2.9	0.1
Btng2	52-71	13.0	0.7	20	117	43.1	476	1416	14.0	27.3	5.0	13.1	10.1	3.5	2.6	0.4	10.5	7.0	5.7	nd	nd	0.6	1.9	9.7	0.3
Btng3	71-92	12.8	0.5	43	121	28.0	420	433	6.4	23.4	5.1	13.9	9.3	2.1	2.5	nd	12.5	6.9	5.5	nd	nd	0.7	1.9	3.5	0.2
2BCrng1	92-120	25.3	1.1	204	244	50.2	263	503	7.1	21.8	6.3	34.9	18.4	3.2	2.5	nd	32.1	18.3	3.0	nd	0.1	0.8	3.4	3.6	0.4
2BCrng2	120-143	29.9	1.4	306	357	60.6	252	636	9.6	23.9	8.3	33.9	13.0	3.6	2.2	nd	43.8	16.5	3.8	nd	0.1	0.5	4.3	4.9	0.6
2BCrg	143-170	36.2	1.8	437	430	76.2	132	811	10.4	21.5	9.4	42.4	12.6	5.8	2.0	nd	54.5	16.3	2.1	nd	nd	0.4	5.2	5.2	0.8
2BCrng3	170-200	29.3	1.6	493	411	77.6	135	337	9.7	19.8	10.1	40.9	11.6	4.9	1.0	nd	58.7	12.6	2.2	nd	nd	0.3	5.5	6.0	0.9
Pedon 26	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																								
Apg	0-14	2.9	0.2	37	76	14.3	723	50	3.4	28.8	6.1	3.5	1.4	1.7	0.4	0.1	2.9	1.5	7.9	nd	nd	0.1	0.4	1.0	0.1
Bng	14-31/46	1.8	nd	7	66	10.7	542	26	2.4	20.6	4.6	1.6	0.9	1.3	nd	nd	1.3	0.7	7.3	nd	nd	nd	0.2	0.8	0.1
Btng1	46-53	10.9	0.2	12	96	18.2	570	48	4.0	26.5	4.4	4.1	3.1	1.6	nd	0.1	6.1	2.0	6.2	nd	nd	nd	1.3	2.8	0.3
Btng2	53-73	19.3	0.4	18	123	27.3	475	234	5.2	25.2	4.1	7.0	5.3	1.9	0.1	0.3	10.8	3.7	6.2	nd	nd	0.1	1.9	7.7	0.4
Btng3	73-92	12.8	0.4	14	106	24.5	481	112	6.1	22.6	3.7	7.4	5.1	2.1	nd	nd	11.1	4.0	5.0	nd	nd	0.2	1.7	3.7	0.2
2Btng4	92-114	16.4	1.0	37	129	55.6	343	978	12.7	22.0	4.7	14.6	9.8	5.2	nd	0.1	18.8	6.8	4.7	nd	nd	0.2	2.3	10.0	0.4
2Btng5	114-137	17.0	0.9	18	147	31.7	408	354	7.3	22.9	4.0	25.7	18.7	2.5	nd	nd	22.4	11.4	4.2	nd	nd	0.2	2.4	4.6	0.2
2Btng6	137-164	20.6	1.1	21	167	38.7	337	211	6.7	23.3	4.8	20.6	12.5	3.6	nd	0.1	29.8	10.1	4.3	nd	nd	0.2	2.8	3.8	0.3
2BCrng	164-200+	36.7	1.1	98	212	52.9	324	231	8.8	26.0	6.7	23.6	10.0	7.3	nd	nd	34.6	10.7	3.5	nd	nd	0.1	3.2	4.5	0.5
Pedon 27	Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																								
Apng	0-20/22	3.1	0.1	26	51	11.0	720	48	3.2	26.9	6.8	3.1	1.3	1.5	nd	nd	2.2	1.4	10.0	nd	nd	nd	0.3	1.0	0.1
Bg	22-40	1.1	nd	11	48	8.1	755	36	3.0	32.9	5.6	1.5	0.7	1.2	nd	0.2	0.7	0.7	8.2	nd	nd	nd	0.1	0.6	0.1
Bng	40-58	1.2	nd	10	47	8.9	672	33	2.8	24.5	5.4	1.4	0.6	0.9	nd	nd	0.5	0.7	9.2	nd	nd	nd	0.1	0.7	0.1
Btng1	58-82	18.1	0.5	29	100	39.5	508	733	6.2	25.4	3.7	11.0	8.8	3.3	nd	0.2	8.6	10.5	5.8	nd	nd	0.2	1.6	13.8	0.5
Btng2	82-104	11.8	0.4	21	115	22.8	450	486	9.3	20.3	3.9	8.7	6.5	2.0	nd	0.1	10.6	7.0	5.9	nd	nd	0.4	1.6	7.3	0.3
Btng3	104-122	14.4	0.6	17	125	24.7	429	637	6.0	20.5	3.8	9.7	7.2	1.7	nd	nd	16.9	7.8	4.2	nd	nd	0.2	2.4	5.1	0.2
Btng4	122-143	21.4	1.0	19	123	34.7	374	984	11.1	21.3	4.2	12.7	9.2	2.1	nd	nd	20.3	9.1	4.8	nd	nd	0.2	2.8	9.0	0.4
Btng5	143-160	23.8	0.8	17	112	28.2	331	592	8.0	18.9	2.9	11.2	8.1	1.7	nd	nd	20.6	7.7	3.4	nd	nd	0.1	2.8	8.7	0.3
2Btng6	160-180	20.7	0.7	14	122	22.9	371	290	5.5	18.9	4.0	7.8	5.4	1.6	nd	nd	18.3	5.7	4.5	nd	nd	nd	2.4	3.7	0.3
2Btng7	180-202+	19.1	1.0	13	130	33.9	388	175	6.3	21.0	5.1	12.4	9.2	1.9	nd	nd	19.1	7.4	3.8	nd	nd	nd	2.6	4.8	0.3

Appendix Table C11 (Continued)

Soil samples	Depth	Element concentrations (mg kg^{-1})																						
	(cm)	Li	Be	P	Ti	V	Cr	Mn	Co	Ni	Cu	Zn	Ga	As	Br	Se	Rb	Sr	Mo	Ag	Cd	I	Cs	Pb	U
Pedon 28 Typic Natraqualf; coarse-loamy, mixed, semiactive, isohyperthemic																								
Apng	0-10/13	2.3	0.1	25	55	11.2	788	59	3.4	29.1	6.8	2.5	1.4	1.3	nd	nd	2.0	1.4	11.1	nd	nd	nd	0.3	1.0	0.1
Bng	13-30	1.3	nd	17	46	9.0	762	52	3.3	28.9	5.5	1.6	0.7	1.2	nd	nd	0.8	0.9	8.2	nd	nd	nd	0.2	0.8	0.1
Btng1	30-44	8.9	0.4	32	83	35.0	702	4536	13.7	34.8	6.8	17.4	11.3	3.7	nd	nd	5.8	21.5	9.9	nd	nd	0.4	1.0	20.0	0.3
Btng2	44-66	6.2	0.2	18	89	15.9	657	459	4.6	27.3	4.7	5.5	3.0	1.7	nd	nd	7.2	5.3	6.8	nd	nd	0.2	1.0	5.3	0.1
Btng3	66-86	5.3	0.3	19	80	16.4	577	136	3.5	22.9	5.2	5.0	2.4	1.5	nd	0.1	8.8	4.7	7.7	nd	nd	nd	1.1	2.4	0.1
Btng4	86-107	6.7	0.4	18	108	17.3	587	296	5.2	24.8	4.7	6.6	3.3	1.6	nd	nd	11.4	5.0	6.1	nd	nd	nd	1.3	6.2	0.1
Btng5	107-138/144	7.8	0.4	16	119	21.4	527	1013	7.1	25.6	5.0	11.2	6.0	1.9	nd	nd	14.5	6.9	6.8	nd	nd	nd	1.6	7.0	0.2
2Btng6	144-168	10.9	0.5	16	142	30.2	441	198	4.0	21.0	4.4	13.5	9.0	1.7	nd	nd	21.3	9.8	4.4	nd	nd	0.1	2.3	3.8	0.2
2Btng7	168-200	20.8	1.7	40	171	87.2	291	286	18.3	24.7	7.5	21.4	14.5	6.1	nd	nd	39.8	14.3	3.7	nd	nd	0.2	4.1	17.4	0.6

Remark: The element concentrations determined using by ICP-MS.

Appendix Table C12 Correlation matrix amoung the chemical composition of salt affected soils (marked cored correlations are significant at $p<0.05$, N=248).

	Li	Be	P	Ti	V	Cr	Mn	Co	Ni	Cu	Zn	Ga	As	Br	Rb	Sr	Mo	Ag	Cd	I	Cs	Pb	U	Si	Al	Fe	Na	Mg	K	Ca	S	Cl	EC	SAR	ESP
Li	1.00																																		
Be	**0.72**	1.00																																	
P	**0.26**	**0.26**	1.00																																
Ti	**0.36**	**0.36**	**0.41**	1.00																															
V	**0.68**	**0.82**	**0.38**	**0.44**	1.00																														
Cr	**-0.60**	**-0.69**	**-0.13**	**-0.55**	**-0.73**	1.00																													
Mn	0.03	**0.16**	0.08	-0.06	0.09	0.07	1.00																												
Co	**0.31**	**0.54**	0.07	**0.12**	**0.44**	**-0.29**	**0.64**	1.00																											
Ni	-0.03	0.02	**0.12**	**-0.25**	-0.07	**0.55**	**0.27**	**0.22**	1.00																										
Cu	**0.36**	**0.57**	**0.31**	**0.15**	**0.65**	**-0.30**	0.01	**0.25**	**0.18**	1.00																									
Zn	**0.57**	**0.77**	**0.47**	**0.40**	**0.84**	**-0.67**	**0.19**	**0.44**	-0.01	**0.69**	1.00																								
Ga	**0.65**	**0.80**	**0.15**	**0.39**	**0.82**	**-0.79**	**0.16**	**0.50**	-0.09	**0.46**	**0.86**	1.00																							
As	0.06	**0.15**	**0.51**	0.10	**0.31**	0.03	**0.38**	**0.25**	**0.21**	**0.17**	**0.36**	**0.12**	1.00																						
Br	0.05	0.04	**0.37**	**0.14**	**0.15**	-0.05	-0.02	0.03	0.08	**0.15**	**0.15**	0.04	0.04	1.00																					
Rb	**0.63**	**0.76**	**0.42**	**0.32**	**0.82**	**-0.70**	0.01	**0.27**	**-0.18**	**0.63**	**0.88**	**0.74**	**0.30**	0.02	1.00																				
Sr	**0.49**	**0.67**	**0.16**	**0.25**	**0.72**	**-0.72**	0.03	**0.25**	**-0.30**	**0.57**	**0.78**	**0.72**	0.09	-0.02	**0.87**	1.00																			
Mo	**-0.43**	**-0.55**	-0.02	**-0.52**	**-0.62**	**0.88**	**0.13**	**-0.24**	**0.42**	**-0.21**	**-0.58**	**-0.76**	**0.13**	-0.11	**-0.51**	**-0.55**	1.00																		
Ag	-0.08	-0.09	0.11	-0.07	**-0.12**	**0.39**	0.10	0.03	**0.47**	**0.12**	**-0.16**	**-0.28**	0.01	0.05	**-0.19**	**-0.25**	**0.47**	1.00																	
Cd	**-0.17**	**-0.13**	**0.40**	-0.08	**-0.16**	**0.47**	**0.34**	0.08	**0.44**	**0.12**	-0.03	**-0.32**	**0.32**	**0.20**	**-0.14**	**-0.23**	**0.58**	**0.54**	1.00																
I	**0.15**	**0.33**	**0.29**	0.09	**0.35**	**-0.23**	0.05	**0.16**	0.11	**0.34**	**0.40**	**0.30**	**0.14**	**0.64**	**0.32**	**0.33**	**-0.21**	0.00	**0.13**	1.00															
Cs	**0.76**	**0.83**	**0.23**	**0.38**	**0.86**	**-0.85**	-0.02	**0.37**	**-0.21**	**0.54**	**0.82**	**0.88**	0.06	0.03	**0.89**	**0.84**	**-0.71**	**-0.27**	**-0.36**	**0.31**	1.00														
Pb	**0.55**	**0.76**	**0.12**	**0.18**	**0.81**	**-0.60**	**0.33**	**0.62**	-0.01	**0.64**	**0.76**	**0.76**	**0.21**	0.02	**0.74**	**0.74**	**-0.47**	-0.09	**-0.13**	**0.33**	**0.78**	1.00													
U	**0.68**	**0.73**	**0.20**	**0.31**	**0.81**	**-0.72**	-0.09	**0.26**	**-0.16**	**0.57**	**0.73**	**0.79**	0.01	**0.15**	**0.78**	**0.73**	**-0.62**	**-0.26**	**-0.35**	**0.39**	**0.89**	**0.75**	1.00												
Si	**-0.65**	**-0.79**	**-0.26**	**-0.46**	**-0.85**	**0.88**	-0.01	**-0.38**	**0.23**	**-0.48**	**-0.82**	**-0.89**	-0.11	-0.05	**-0.81**	**-0.77**	**0.80**	**0.32**	**0.35**	**-0.31**	**-0.92**	**-0.70**	**-0.77**	1.00											
Al	**0.64**	**0.74**	0.09	**0.45**	**0.79**	**-0.89**	-0.04	**0.38**	**-0.24**	**0.41**	**0.72**	**0.89**	-0.06	0.06	**0.68**	**0.69**	**-0.85**	**-0.33**	**-0.47**	**0.28**	**0.89**	**0.65**	**0.74**	**-0.96**	1.00										
Fe	**0.63**	**0.80**	**0.32**	**0.46**	**0.94**	**-0.83**	0.04	**0.40**	**-0.22**	**0.59**	**0.85**	**0.84**	**0.26**	0.07	**0.85**	**0.78**	**-0.71**	**-0.26**	**-0.28**	**0.31**	**0.89**	**0.77**	**0.82**	**-0.91**	**0.85**	1.00									
Na	**0.36**	**0.46**	0.11	**0.12**	**0.42**	**-0.41**	0.07	**0.19**	**-0.12**	**0.32**	**0.51**	**0.44**	**0.17**	-0.05	**0.59**	**0.60**	**-0.24**	-0.01	0.02	**0.31**	**0.51**	**0.48**	**0.44**	**-0.47**	**0.37**	**0.45**	1.00								
Mg	**0.30**	**0.33**	**0.68**	**0.41**	**0.35**	**-0.34**	0.09	**0.12**	-0.11	**0.17**	**0.54**	**0.31**	**0.56**	0.00	**0.54**	**0.34**	**-0.18**	**-0.13**	**0.16**	0.07	**0.36**	**0.16**	**0.18**	**-0.43**	**0.25**	**0.43**	**0.27**	1.00							
K	**0.32**	**0.42**	**0.77**	**0.47**	**0.48**	**-0.43**	0.07	**0.14**	**-0.15**	**0.30**	**0.65**	**0.39**	**0.51**	0.02	**0.66**	**0.46**	**-0.27**	**-0.14**	0.10	**0.12**	**0.47**	**0.27**	**0.29**	**-0.53**	**0.36**	**0.54**	**0.30**	**0.89**	1.00						
Ca	**0.20**	**0.27**	**0.51**	**0.31**	**0.35**	**-0.33**	0.05	0.09	-0.11	**0.14**	**0.41**	**0.30**	**0.21**	0.06	**0.41**	**0.34**	**-0.24**	**-0.12**	**0.25**	0.09	**0.33**	**0.16**	**0.22**	**-0.42**	**0.26**	**0.36**	**0.20**	**0.54**	**0.54**	1.00					
S	**0.43**	**0.38**	**0.15**	**0.18**	**0.43**	**-0.44**	-0.11	0.04	**-0.28**	**0.32**	**0.41**	**0.35**	0.02	0.06	**0.62**	**0.58**	**-0.28**	**-0.18**	**-0.20**	**0.20**	**0.57**	**0.46**	**0.58**	**-0.38**	**0.31**	**0.45**	**0.48**	**0.15**	**0.20**	**0.18**	1.00			
Cl	**0.32**	**0.39**	**0.13**	0.02	**0.43**	**-0.41**	-0.09	0.02	**-0.25**	**0.40**	**0.45**	**0.36**	0.07	-0.04	**0.63**	**0.73**	**-0.21**	-0.07	-0.08	**0.30**	**0.55**	**0.48**	**0.50**	**-0.44**	**0.33**	**0.47**	**0.73**	**0.25**	**0.30**	**0.22**	**0.56**	1.00		
EC	0.04	0.06	**0.20**	-0.04	0.09	0.01	-0.06	-0.08	0.01	**0.20**	**0.15**	0.00	0.10	0.15	**0.22**	**0.25**	**0.13**	0.10	**0.21**	**0.43**	0.11	**0.15**	**0.21**	-0.05	-0.05	0.09	**0.62**	0.09	0.07	0.07	**0.34**	**0.62**	1.00		
SAR	**-0.14**	-0.11	**0.15**	**-0.17**	**-0.19**	**0.40**	0.11	-0.02	**0.34**	0.04	**-0.13**	**-0.30**	**0.22**	-0.03	-0.11	**-0.19**	**0.55**	**0.48**	**0.56**	**0.13**	**-0.27**	**-0.16**	**-0.27**	**0.29**	**-0.37**	**-0.26**	**0.30**	0.05	0.01	0.01	-0.08	0.10	**0.50**	1.00	
ESP	**-0.19**	**-0.13**	-0.09	**-0.33**	**-0.28**	**0.38**	**0.12**	-0.08	**0.22**	-0.04	**-0.16**	**-0.28**	**0.19**	**-0.30**	-0.06	**-0.13**	**0.52**	**0.27**	**0.34**	-0.05	**-0.26**	**-0.14**	**-0.26**	**0.30**	**-0.38**	**-0.28**	**0.29**	0.03	-0.03	-0.08	-0.04	0.09	**0.30**	**0.74**	1.00

Appendix Table C13 Soil reaction, pH (soil: water=1:1).

Rating	Range
Ultra acid	<3.5
Extremely acid	3.5-4.4
Very strongly acid	4.5-5.0
Strongly acid	5.1-5.5
Moderately acid	5.6-6.0
Slightly acid	6.1-6.5
Neutral	6.6-7.3
Slightly alkaline	7.4-7.8
Moderately alkaline	7.9-8.4
Strongly alkaline	8.5-9.0
Very strongy alkaline	>9.0

Appendix Table C14 Organic matter content (%organic carbon x 1.724).

Rating	Range ($g\ kg^{-1}$)
Very low	<5
Low	5-10
Moderately low	10-15
Medium	15-25
Moderately high	25-35
High	35-45
Very high	>45

Appendix Table C15 Total nitrogen.

Rating	Range ($g\ kg^{-1}$)
Very low	<0.25
Low	0.50-0.75
Medium	0.75-1.25
High	1.25-1.75
Very high	>2.25

Appendix Table C16 Available phosphorus (Bray II).

Rating	Range (mg kg^{-1})
Very low	<3
Low	3-6
Moderately low	6-10
Medium	10-15
Moderately high	15-25
High	25-45
Very high	>45

Appendix Table C17 Available potassium.

Rating	Range (mg kg^{-1})
Very low	<30
Low	30-60
Medium	60-90
High	90-120
Very high	>120

Appendix Table C18 Cation exchange capacity (CEC).

Rating	Range (cmol kg^{-1})
Very low	<3
Low	3-5
Moderately low	5-10
Medium	10-15
Moderately high	15-20
High	20-30
Very high	>30

Appendix Table C19 Base saturation percentage (PSB).

Rating	Range (%)
Low	<35
Medium	35-75
High	>75

Appendix Table C20 Extractable acidity (EA).

Rating	Range (cmol kg^{-1})
Very low	<1.0
Low	1.0-2.0
Medium	2.0-5.0
Moderately high	5.0-10.0
High	10.0-20.0
Very high	>20.0

Appendix Table C21 Bulk density (BD).

Rating	Range (Mg m^{-1})
Low	<1.2
Moderately low	1.2-1.4
Medium	1.4-1.6
Moderately high	1.6-1.8
High	1.8-2.0
Very high	>2.0

Source: Nongkran (1986)

Appendix Table C22 Hydralic conductivity (Ksat).

Rating	Range (cm hr^{-1})
Very slow	<0.125
Slow	0.125-0.50
Moderately slow	0.50-2.00
Moderate	2.00-6.25
Moderate rapid	6.25-12.50
Rapid	12.50-25.00
Very ripid	>25.00

Source: O'Neal (1952)

Appendix Table C23 Chemical criteria for salt affected soils classification.

Soil	pH	Electrical Conductivity (EC) (dS m^{-1})	Sodium Adsorption Ratio (SAR)	Exchangeable Sodium percentage (ESP) (%)
Normal	6.7-7.2	<4	<13	<15
Saline	<8.5	>4	<13	<15
Sodic	≥8.5	<4	>13	>15
Saline-Sodic	<8.5	>4	>13	>15

Source: Brady and Weil (2002)

Appendix Table C24 X-ray diffraction spacing obtained from (001) planes of layer-silicated species as related to sample treatment.

Diffraction spacing (nm)	Minerals (or minerals) Indicated
	Mg-saturated, air-dried
1.4-1.5	Smectite, vermiculite, chlorite
0.99-1.01	Mica (illite), halloysite
0.72-0.75	Metahalloysite
0.715	Kaolinite, chlorite (2nd-order maximum)
	Mg-saturated, glycerol-solvated
1.77-1.80	Smectite
1.4-1.5	Vermiculite, chlorite
1.08	Halloysite
0.99-1.01	Mica (illite)
0.72-0.75	Metahalloysite
0.75	Kaolinite, chlorite (2nd-order maximum)
	K-saturated, air-dride
1.4-1.5	Chlorite, vermiculite (with interlayer aluminium)
1.24-1.28	Smectite
0.99-1.01	Mica (illite), halloysite, vermiculite (contracted)
0.72-0.75	Metahalloysite
0.715	Kaolinite, chlorite (2nd-order maximum)
	K-saturated, heated (550 ºC)
1.4	Chlorite
0.99-1.01	Mica, vermiculite (contracted), smectite (contracted)
0.715	Chlorite (2nd-order maximum)

Source: Whittig (1965)