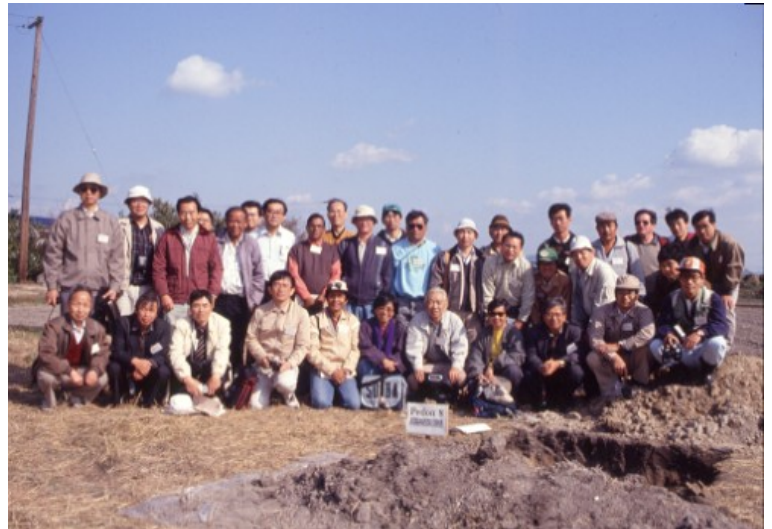




Pedon 8



location : kazuwara-ohgi, Tadotsu town, Kagawa prefecture
 133° 46' 32" E, 34° 15' 35" N

topography : alluvial fan

relief : flat elevation : 5m above sea level

land use : rice(summer)-wheat(winter) rotation

soil moisture regime : anthraquic

classification :

Japanese pedologist group	---	Grayized paddy soil
MAFF	---	Gray Lowland soil
USDA Soil Taxonomy	---	(anthraquic) Haplaquept
FAO world soil map	---	Fluvisol

- Apg 0-20cm gray (5Y 3.5/1), clay loam, many roots of rice, compact (20mm), abrupt smooth boundary
- Eg 20-23 gray (5Y 4.5/1), clay loam, faint thread-like and film-like iron mottles, moderate blocky structure, common roots of rice, extremely compact (30mm), clear smooth boundary
- Bsg 23-28 gray (5Y 4.5/1), clay loam, many distinct thread-like iron mottles, strong prismatic structure, extremely compact (31mm), clear smooth boundary
- Bwg1 28-41 gray (5Y 5/1), clay loam, many cloud-like iron mottles and few thread-like iron and manganese mottles, strong prismatic structure, very compact(29mm), smooth diffuse boundary
- Bwg2 41-64 gray (5Y 4.5/1), clay loam, abundant cloud-like iron mottles, few manganese spots, strong prismatic structure, very compact (29mm), wavy diffuse boundary
- Bwg3 64-100+ gray (5Y 4.5/1), clay loam, many cloud-like iron mottles, few tube-like iron mottles, weak prismatic structure, very compact (26mm)

horizon	T-C	T-N	C/N	coarse fragm. %	particle-size distr. %				text. class
	%	%			CoS	FS	silt	clay	
1. Apg	2.03	0.212	9.6	1.6	11.5	43.7	27.1	16.7	CL
2. Eg	0.69	0.083	8.2	4.3	15.8	41.5	27.5	15.1	CL
3. Bsg	0.55	0.069	7.9	3.5	12.7	41.6	29.5	16.3	CL
4. Bwg1	0.42	0.058	7.2	1.0	9.6	37.1	33.9	19.4	CL
5. Bwg2	0.33	0.047	7.1	0.6	8.0	35.7	33.9	22.4	CL
6. Bwg3	0.35	0.045	7.9	2.2	14.5	43.5	24.1	17.9	CL

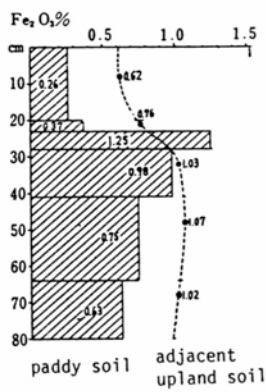
	pH		CEC NH ₄ OAc meq/100g	exch. bases		meq/100g		base satur. %	bulk density g/cm ³
	H ₂ O	KCl		Ca	Mg	K	Na		
1.	5.94	5.32	12.0	8.70	1.65	0.33	1.29	92	1.31
2.	6.26	5.40	9.3	6.88	1.37	0.30	0.20	94	} 1.63
3.	6.34	5.42	9.7	7.10	1.38	0.27	0.18	92	
4.	6.27	5.14	8.5	6.30	1.24	0.26	0.19	93	
5.	6.25	5.01	9.1	7.64	1.29	0.27	0.21	104	1.67
6.	6.12	4.88	-	-	-	-	-	-	1.75

	porosity pF		three phase V%			Fe ₂ O ₃ %			MnO ₂ ppm	
	0-1.5	1.5-4	solid	liquid	air	Fe _o	Fe _m	Fe _t	Mn _m	Mn _t
1.	6.4	18.8	54.0	38.5	7.5	0.25	0.26	1.31	70	185
2.	} 5.6	} 7.8	} 64.0	} 28.5	} 7.5	0.29	0.37	1.46	87	201
3.						0.95	1.25	2.37	106	227
4.	-	-	63.7	32.1	4.2	0.40	0.98	2.23	126	237
5.	3.0	3.2	65.4	31.6	3.0	0.26	0.75	2.08	270	463
6.	-	-	67.8	29.7	2.5	0.33	0.63	1.93	103	227

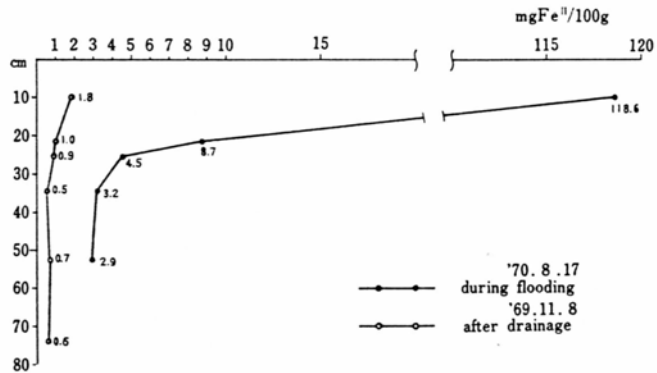
	humic substance*			humic acid*			clay mineralogy		
	a	b	PQ	RF	log k	type	Mt/It	It	Ht
1.	11.6	7.05	62.2	35	.769	Rp			
2.	3.36	3.00	52.8	83	.592	A	+++	++	++
3.	1.60	3.00	34.8	107	.566	A			
4.	0.30	1.94	13.4	51	.716	B	+++	++	++
5.	0.14	1.52	8.4	34	.827	Rp			
6.	-	-	-	-	-	-			

5-8-3. Remarks

1. The profile is gray-colored throughout with many rusty iron mottles and a few manganese spots. However the soil of adjacent upland crop field is dull brown-colored throughout. Morphological characters of paddy soil must have been formed under wet cultivation of rice.
2. A reducing condition extends from the surface downward under flooded condition in rice growing season. Active Fe^{2+} content was the highest in ploughlayer and decreased with depth. However even the grayized lower horizons have distinctly higher Fe^{2+} contents in rice growing season than in off-season (see Fig. below).



Vertical distribution of iron in Tadotsu soils



(pH 2.8 Na-acetate 浸出)
Active ferrous iron in Tadotsu paddy soil

- 3.1) The Apg and Eg horizons have been strongly depleted of iron by reductive eluviation, and have no iron mottles (see Fig. above).
- 2) The Bsg horizon is an iron accumulation horizon with many thread-like iron mottles along root channels.
- 3) Grayized lower horizons (Bwg1~Bwg3) are the horizons altered by wet cultivation of rice. These horizons are characterized by gray parts spreading along ped-faces and root channels, and many cloud-like iron mottles in the matrix.
- 4) Percents base saturation have been raised from around 50% of adjacent upland soil to 90-100% due to the supply of bases from irrigation water.
- 5) Clay coatings are occasionally found on channel walls and ped-faces in grayized subsoil indicating a slight downward migration of clay.