



RESEARCH ARTICLE

Characterization and classification of soils of Veerapandi block of Salem district of Tamil Nadu-South India

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ABSTRACT

A detailed soil survey was carried out in Veerapandi block of Salem district consists of 53 villages spread over 13680 hectares. Based on variation in physiography and landform, nine soil series and 57 soil mapping units were identified. Nine typifying pedons representing the soil series were analyzed for its physicochemical properties and characterized for mapping. Soils are shallow to very deep, well-drained to somewhat poorly drained, light to dark coloured, light to heavy textured. pH of soils ranged from 6.3 to 9.1 with mean value of 7.1, EC ranged between 0.1 to 0.5 dsm^{-1} , OC varied from 0.07 to 1.18 % with mean value of 0.63 %, CEC ranged from 8.6 to 39.7 cmol (p+) kg^{-1} with mean value of 17.9 cmol (p+) kg^{-1} . The land capability classification in the study area indicates that moderately good cultivated soils covered 71.4 percent area was affected with moderate limitations of erosion, whereas the extent of moderate limitations of erosion and calcareousness was 6.74 percent. The land irrigability groupings indicate that about 78.2 percent area of the block may be used safely under irrigation. The erosion and calcareousness land covering 21.8 percent of the area was moderately suitable for sustained use under irrigation, provided proper soil and water conservation measures to be adopted.

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INTRODUCTION

Agricultural land-use planning involves making knowledgeable decisions about land use and the environment (1) Soil is one of the most critical natural resources and maintaining its health is essential for meeting an ever-increasing demand for food, fibre, fodder and fuel (2). Standard soil survey helps to collect information about soil genesis, extent, and to assess their potentials and limitations for a specific purpose (3), (4), (5). An uncontrolled agricultural land expansion onto fragile and less productive land, e.g. steeper slopes coupled with low agricultural land productivity and population pressure have led to land degradation (6). To adopt good management practices and remedial measures for various soils, a systematic study of the soils is highly essential. (Sudhalakshmi et al. 2011) The soils boundaries are demarcated based on actual traverses throughout the course. A soil test is the analysis of a soil sample to determine nutrient and contaminant content and also other characteristics such as salinity, acidity, alkalinity and calcareousness level of a particular soil. Since the above parameter mainly affects the growth of any crop. Tests are usually performed to measure

the expected growth potential of soil. To find out the soil types and fertility status of Veerapandi block of Salem district, TamilNadu state, a systematic study was conducted by utilizing cadastral level maps.

MATERIALS AND METHODS

Geographically, the Veerapandi lies between $11^{\circ} 30'$ and $11^{\circ} 41'$ North latitude and $77^{\circ} 59'$ and $78^{\circ} 07'$ East longitude with an area of 13680.12 ha. The general elevation of the area ranges from 221 to 986 m (Kanjmalai) above mean sea level (MSL) (Figure 1,2 and 3). The main drainage is the Thirumanimutharu river. The block is drained by gullies and small streams into tanks. All the streams and tanks are seasonal and dependent on rainfall. Soil erosion is very severe in the uplands due to occasional high intensity downpour and higher topographical position. The climate of Veerapandi is hot moist and semi-arid with a mean annual rainfall of 1004.4 mm. Mean annual temperature of 33°C and PET of 1747.2 mm. The relative humidity is high during the monsoon season. The area qualifies for iso hyperthermic soil temperature regime. The geology of the study area, rocks belongs to the great metamorphic or gneissic series of South India of Archean age with patches of Dharwar places.

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Intrusive in these are the older charnockite series and younger igneous intrusions of which the basic trap dykes and magnesite series of the chalk hills are the most conspicuous. Much of the block is covered by a very interesting series of igneous rocks which are recognized as charnockites. The natural vegetation comprises of (*Ficus clomerata*), Country ber (*Zizyphus jujube*), Babul (*Acacia Arabica*), Nuna (*Morinda tinctoria*), Banyan (*Ficus bengalensis*), *Mangifera indica*, *Tamarindus indica*, *Azadirachta indica*. Major crops are Tapioca, maize, paddy, Arecanut, Turmeric, Tomato in irrigated tracts cholam and groundnut in rainfed uplands.

Experimental site

A complete traverse of the revenue villages of Veerapandi block was made to identify different soil series by utilizing cadastral maps of 1:3000 to 1:8000 scales. Pedon sites were located in transects along the slope from the upper to lower slopes. Nine pedons were exposed and studied for morphological characteristics as per soil survey manual [7].

Surface samples were collected by utilizing GPS from all the phases of the series. A total of 640 soil samples were collected from 53 revenue villages of Veerapandi block of Salem district at 0-15 cm depth by adopting standard procedures of soil sample collection. Horizon wise profile samples and mapping unit wise surface samples were collected, air-dried and sieved through 2 mm sieve for organic carbon, labeled and stored, analyzed for particle size distribution following international pipette method. The samples were analyzed for parameters viz, pH, and EC (8) and organic carbon (9). The cation exchange capacity (CEC) and exchangeable cations were determined with available K (11), available Zn, Fe, Cu and Mn (12) as prescribed by Jackson,1958[10]. Based on the nutrients ratings as followed in Tamil Nadu, the soil samples were categorized into low, medium, and high categories for macronutrients and as deficient and sufficient for available micronutrients.

Generation of thematic soil fertility maps

Database on LCC and LIC was generated in microsoft Excel package and theme maps generated by using Arc-GIS software version 10.1.

RESULTS AND DISCUSSION

Nine soil series, namely Anaikattipalayam, Ayipalayam Ettimanickampatti, Ilampillai, Keerapappambadi, Kurakkapuram, Pattanam Muniappampalayam, Perumampatti and Pethampatti were identified and mapped in Veerapandi block of Salem district based on their morphological properties (Table-1) and physicochemical properties (Table-2), range and mean values of physicochemical properties of Veerapandi

block soil series (Table-3), and the soil taxonomic information is given in Table 4.

Soil morphology

Soils of Anaikattipalayam series were moderately deep, calcareous, moderately well-drained, sandy loam to clay texture, moderate to extreme alkaline pH (8.7-9.1), non saline (EC 0.1-0.2), dark yellowish-brown (10YR3/6) colour, and classified as Fine, mixed, calcareous, is hyperthermic Typic Haplustepts. These soils formed the upper part of the gently sloping uplands with a slope gradient of 1-3 percent and subjected to slight to moderate erosion. The soils of Ayipalayam series consists of moderately deep; it is moderately well drained with rapid to moderately slow permeability, non calcareous with sandy loam to sandy clay in surface texture, moderate to strong alkaline pH (8.1-8.3), non saline (EC 0.1-0.2), Its colour is dark reddish-brown to dark brown in the hue of 5 YR to 7.5 YR and classified as Fine mixed isohyperthermic Typic Rhodustalfs. Ettimanickampatti series consists of moderately deep soil; it is well-drained with rapid to moderately rapid permeability, non calcareous with sandy loam to sandy clay loam in texture, moderately alkaline to strongly alkaline pH(8.1- 8.6), non saline (EC 0.1-0.2), Its colour is dark brown in the hue of 7.5 YR and classified as Fine loamy, mixed, isohyperthermic Typic Haplustepts. These soils formed the upper part of the gently sloping uplands with a slope gradient of 1-3 percent and subjected to slight to moderate erosion. Illampillai series consists of deep soil; it is moderately well-drained, with moderately slow permeability, calcareous with sandy clay loam in texture. Moderately alkaline to strongly alkaline pH (8.1 -9.1) and non saline (EC 0.1-0.4), Its colour is yellowish red in the hue of 5 YR to dark brown in the hue of 10 YR and classified as fine loamy mixed, calcareous isohyperthermic Typic Haplustepts. These soils formed the upper part of the gently sloping uplands with a slope gradient of 1-3 percent and subjected to slight to moderate erosion. Keerapappampadi series consists of shallow soil, it is well drained with moderately rapid to rapid permeability, non calcareous with sandy loam to sandy clay loam in texture. It is formed from weathered gneiss. Moderately alkaline to strongly alkaline pH (8.2-8.3) ,non saline (EC 0.1), Its colour is yellowish red in the hue of 5 YR to light yellowish-brown in the hue of 10 YR and classified as coarse loamy mixed isohyperthermic Typic Haplustepts. These soils formed the upper part of the gently sloping uplands with a slope gradient of 0-3 per cent and subjected to slight to moderate erosion.

Kurakkapuram series consists of shallow soil; it is moderately well drained with moderately rapid to rapid permeability, calcareous soil, with sandy

Table 1. Morphological characteristics of pedons in Veerapandi block

Horizon	Depth	Colour	Texture	Structure	Effervescence	Root distribution
Pedon 1 Anaikattipalayam - Fine mixed calcareous isohyperthermic Typic Haplustepts						
Ap	0-25	10 YR 4/2	Sc	m2sbk	Profuse	Mc
BW1	25-46	10 YR 3/4	Sc	m2sbk	Profuse	Cf
BW2	46-80	10 YR 3/6	Sc	m2sbk	Profuse	Ff
Pedon 2 Ayipalayam Fine mixed isohypothermic Typic Rhodustalfs.						
Ap	0-22	7.5 YR 4/4	Scl	m2 sbk	Nc	Ff
Bt1	22-51	2.5 YR	Sc	m2sbk	Nc	Ff
Bt2	51-70	2.5YR 3/6	Sc	m2sbk	Nc	Ff
Bt3	70-94	2.5 YR 3/6	Gsc	M2sbk	Nc	Ff
Pedon 3 Ettimanickampatti Fine loamy mixed isohyperthermic Typic Haplustepts.						
Ap1	0-20	7.5 YR 4/4	Sl	m2 sbk	Nc	Mf
Bt1	20-35	7.5 YR 4/4	Scl	m2sbk	Nc	Ff
Bt2	35-53	7.5YR 3/2	Scl	m2 sbk	Nc	Ff
Bt3	53-85	7.5 YR 3/2	Scl	m2 sbk	Nc	Ff
Pedon 4 Ilampillai- Fine loamy mixed calcareous isohyperthermic Typic Haplustepts.						
Ap	0-16	10 YR 4/3	Scl	m3 sbk	Profuse	Ff
Bt1	16-27	10 YR 3/4	Scl	m2sbk	Profuse	Ff
Bt2	27-58	5 YR 3/3	Scl	m2sbk	Profuse	Ff
Bt3	58-80	5 YR 3/4	Sc	m2sbk	Profuse	Ff
Bt4	80-135	5YR 4/6	Sc	m2sbk	Profuse	Ff
Pedon 5 Keerapappambadi- Coarse loamy mixed isohyperthermic Typic Haplustepts.						
Ap	0-19	10 YR 6/4	Sl	m2 sbk	Slight	Mf
B2t	19-40	5 YR 4/6	Sc	m2sbk	Slight	Ff
Pedon 6 Kurakkapuram- Fine loamy mixed calcareous isohyperthermic Typic Rhodustalfs.						
Ap	0-20	10 YR 5/6	Scl	m2 sbk	Profuse	Cf
BW1	20-48	5YR	Scl	m2sbk	Profuse	Ff
Pedon 7 Pattanam muniappan palayam - Fine mixed calcareous isohyperthermic Typic Rhodustalfs,						
Ap	0-19	7.5 YR 6/4	Scl	m2 sbk	Nc	Cf
BW1	19-35	5Y R 4/4	Sc	m2sbk	Nc	Cf
BW2	35-58	2.5 YR4/4	Sc	m2sbk	Nc	Cf
Pedon 8 Perumampatti –Fine loamy mixed calcareous isohypothermic Typic Haplustepts .						
Ap1	0-15	7.5 YR 5/4	Sl	m2 sbk	Profuse	Mf
B1t	15-34	5YR 4/4	Scl	m2sbk	Profuse	Ff
B2t	34-64	5YR	Scl	m2sbk	Profuse	Ff
Pedon 9 Pethampatti – Coarse loamy mixed isohypothermic Typic Haplustepts.						
Ap	0-16	10YR 5/3	Ls	m2 sbk	Nc	Ff
BW1	16-25	10YR 5/6	Sl	m2sbk	Nc	Ff
BW2	25-40	10YR 4/6	Sl	m2sbk	Nc	Mf
BW3	40-60	10YR 4/6	Gsl	m2sbk	Nc	Mf
BW4	60-75	10YR 5/6	Gsl	m2sbk	Nc	Mf

loam to sandy clay loam in surface texture. It is formed from calcareous weathered gneiss. Strongly alkaline pH (8.8), non saline (EC 0.1-0.2), Its colour is dark reddish-brown in the hue of 5 YR to grayish brown in the hue of 10 YR and classified as fine loamy mixed calcareous isohyperthermic Typic Haplustepts. These soils formed the upper part of the gently sloping calcareous uplands with a slope gradient of 0-3 percent and subjected to slight to

moderate erosion. Pattnam Muniappan palayam series consists of moderately shallow soil; it is well drained to moderately well drained soil with rapid to moderately rapid permeability, calcareous soil, with sandy clay loam to sandy clay in surface texture. Strongly alkaline pH (8.6) and non-saline (EC 0.3-0.5), Its colour is reddish-brown in the hue of 2.5 YR to light brown in the hue of 7.5 YR and classified as fine mixed calcareous isohyperthermic Typic

Rhodustalfs. These soils formed the upper part of the gently sloping uplands with a slope gradient of 0-3 percent and subjected to slight to moderate erosion.

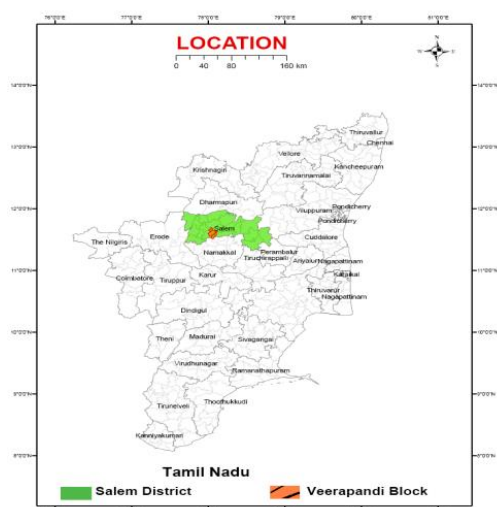


Figure 1. Location of Veerapandi block of Salem district map

Perumampatti series consists of moderately shallow soil; it is moderately well drained with rapid permeability, calcareous soils with sandy loam to sandy clay loam in the surface texture. Strongly

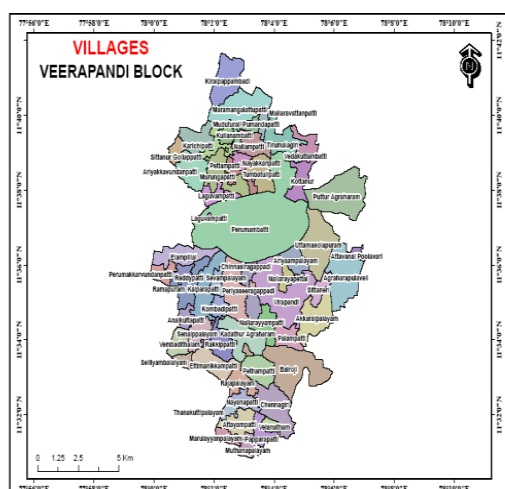


Figure 2. Veerapandi block village map

alkaline pH (8.4- 8.6) and non-saline (EC 0.1- 0.2), Its colour is dark reddish-brown in the hue of 5 YR to brown in the hue of 7. 5YR and classified as fine loamy mixed calcareous isohyperthermic Typic Haplustepts. These soils formed the upper part of the gently sloping uplands with a slope gradient of 1-3 percent and subjected to slight to moderate erosion. Pethampatti series consists of moderately shallow soil; it is well-drained with rapid permeability, non calcareous soil, with loamy sand in surface texture. It is formed from non calcareous weathered gneiss. Slightly acidic to neutral pH (6.3-7.0) and non

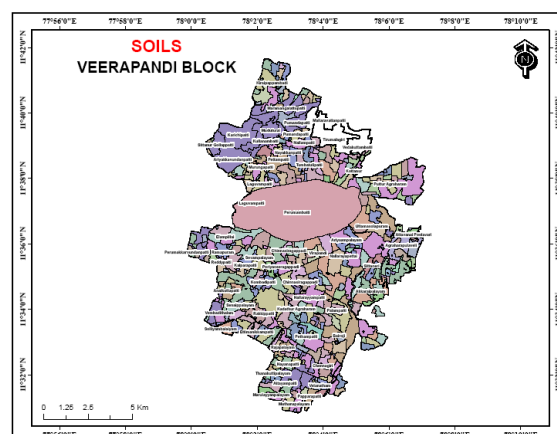


Figure 3. Veerapandi block soil series map
saline (EC 0.1-0.3), Its colour is yellowish-brown in the hue of 10 YR to brown and classified as coarse

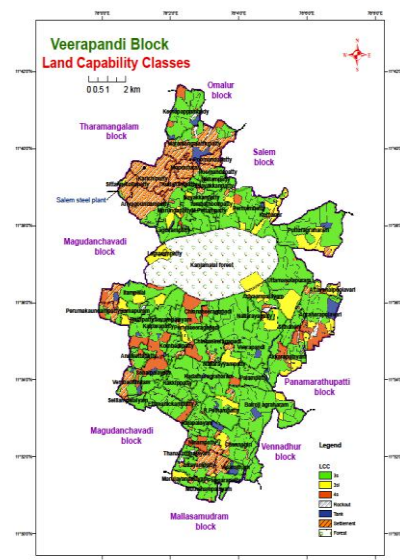


Figure 4. LCC of Veerapandi block of Salem district.

loamy mixed isohyperthermic Typic Haplustepts. These soils formed the upper part of the gently sloping uplands with a slope gradient of 0-1 percent and subjected to slight erosion.

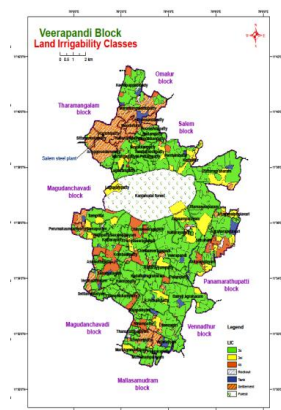
Physico-chemical characteristics

Physico-chemical characteristics of the soils are presented in Table 3. The sand content in low land soils ranged from 48.3 to 93.0 percent with a mean value of 70.8 and silt content ranged from 1.7 to 17.2 per cent with a mean value of 9.45 percent. The sand content was higher in surface horizons of low lands, whereas higher clay content was found in the sub-surface horizon because of the illuviation of fine fractions from the surface layers. Sand content in soils of low lands of higher altitude was higher and decreased with increasing depth. The silt content in all the pedons has irregular trend with the depth. The pH of soils ranged from 6.3 to 7.9 with a mean

Table 2. Physico-chemical properties of typifying pedons in Veerapandi block

Horizons	Depth	Sand	clay	Silt	pH	EC	OC	CEC	Exchangeable				ESP	BSP
									Ca	Mg	Na	K		
Pedon 1. Anaikattipalayam - Fine mixed calcareous isohyperthermic Typic Haplustepts														
Ap	0-25	58.5	35.00	6.50	8.7	0.18	1.18	30.10	14.2	4.47	5.40	1.21	17.9	83.9
BW1	25-46	57.8	36.00	6.20	9.1	0.20	0.24	31.30	12.2	5.09	7.80	1.81	24.9	85.9
BW2	46-80	56.7	36.00	7.00	9.1	0.21	0.21	29.10	10.4	3.64	7.90	2.18	27.1	82.9
Pedon 2. Ayipalayam - Fine mixed isohypothermic Typic Rhodustalfs.														
Ap	0-22	62	30	8	8.3	0.16	0.35	20.0	11.5	3.2	2.1	0.9	10.5	88.5
Bt1	22-51	46	40	14	8.4	0.11	0.30	31.8	16.0	7.6	3.6	1.9	11.3	91.5
Bt2	51-70	47	38	15	8.1	0.16	0.27	29.2	13.2	6.9	2.4	1.6	8.2	82.5
Bt3	70-94	50	37	13	8.1	0.19	0.13	28.2	15.1	6.2	3.1	1.7	10.9	92.7
Pedon 3. Ettimanickampatti - Fine loamy mixed isohyperthermic Typic Haplustepts.														
Ap1	0-20	79	18	3.0	8.1	0.2	0.20	23.6	11.2	5.4	2.6	1.6	11.1	87.4
Bt1	20-35	70	25	5.0	6.3	0.1	0.1	23.2	11.5	6.6	2.4	1.4	10.3	94.2
Bt2	5-53	64	32	4.0	8.6	0.1	0.1	22.6	12.5	4.2	2.2	1.4	9.9	89.8
Bt3	53-70	63	33	4.0	8.3	0.1	0.3	20.2	18.2	3.2	1.8	2.0	8.9	86.9
Bt4	70-112	62	33	5.0	8.5	0.1	0.1	18.6	14.5	4.1	2.4	1.6	12.9	88.7
Pedon 4. Ilampillai - Fine loamy mixed calcareous isohyperthermic Typic Haplustepts.														
Ap	0-16	58.5	35	6.5	8.1	0.4	0.99	20.3	10.4	3.2	2.4	0.8	11.8	82.7
Bt1	16-27	60.4	34	6.8	8.8	0.14	0.93	22.1	12.2	2.2	3.4	1.2	15.3	85.4
Bt2	27-58	48.3	38	6.7	9.0	0.16	0.26	25.3	13.2	4.2	4.6	1.2	18.2	91.6
Bt3	58-80	50.8	37	17.2	9.1	0.13	0.26	39.1	20.2	6.4	7.4	2.4	18.9	93.1
Bt4	80-135	49.3	37	1.7	8.9	0.18	0.32	36.7	17.4	5.3	7.2	1.8	19.1	95.8
Pedon 5. Keerapappambadi - Coarse loamy mixed isohyperthermic Typic Haplustepts														
Ap1	0-19	73.1	22	4.9	8.2	0.1	0.63	15.7	9.4	3.4	1.3	0.32	8.31	91.9
B2t	19-40	70.4	26	3.6	8.3	0.1	0.40	12.9	7.8	1.9	1.4	0.13	10.9	87.1
Pedon 6 Kurukkapuram - Fine loamy mixed calcareous isohyperthermic Typic Rhodustalfs,														
Ap	0-20	70.2	25	4.8	8.8	0.2	0.57	15.2	4.1	3.2	0.3	0.32	12.6	89.9
BW1	20-48	68.8	27	4.2	8.7	0.1	0.35	13.2	4.3	3.6	0.2	0.13	15.4	90.9
Pedon 7 Pattanam muniappan palayam - Fine mixed calcareous isohyperthermic Typic Rhodustalfs,														
Ap	0-19	60	30	10	8.6	0.3	0.29	28.2	12.2	5.3	4.6	2.1	16.3	85.8
Bt1	19-35	50	36	14	8.7	0.5	0.46	35.6	18.6	4.6	5.2	1.9	14.6	85.1
Bt2	35-58	60	30	10	8.6	0.5	0.52	34.4	16.2	7.1	6.1	2.2	27.1	91.8
Pedon 8 Perumampatti- Fine loamy mixed calcareous isohypothermic Typic Haplustepts .														
Ap	0-15	70	23	7	8.4	0.2	0.26	10.8	5.2	1.6	1.2	0.4	11.1	77.7
B1t	15-34	62	30	8	8.6	0.1	0.32	25.8	12.6	4.8	3.2	1.2	12.4	84.4
B2t	34-64	64	29	7	8.6	0.1	0.10	30.5	14.6	7.6	4.6	1.8	15.1	93.7
Pedon 9 Pethampatti - Coarse loamy mixed isohypothermic Typic Haplustepts.														
Ap	0-16	93	5	2	7.0	0.1	0.21	10.2	5.2	1.4	0.8	0.2	7.8	74.5
BW1	16-25	78	16	5	6.3	0.1	0.07	8.6	4.1	1.0	0.6	0.8	6.9	75.6
BW2	25-40	85	12	3	6.3	0.1	0.30	12.1	6.9	1.2	0.6	0.6	4.9	76.8
BW3	40-60	86	10	4	6.5	0.1	0.10	10.4	4.8	1.0	1.0	1.0	7.8	73.1
BW4	60-75	81	14	5	6.9	0.1	0.07	10.2	5.0	1.6	0.8	0.8	5.9	78.1

value of 7.1, electrical conductivity ranged between 0.1 to 0.5 with an average value of 0.3 dSm⁻¹ and C varied from 0.07 to 1.18 with a mean value of 0.63.

**Figure 5. LIC of Veerapandi block of Salem district.**

Exchangeable properties

Cat ion exchange capacity of typifying pedons ranged from 8.5 to 27.4 cmol (p⁺)/kg with an average value of 17.9 cmol(p⁺)/kg. The CEC increased with an increase in clay content of the pedons. Higher values of CEC in subsurface horizons commensurate with the amount of clay. The CEC increased with depth in the pedons of Ayipalayam, Ilampillai, Pattanam muniappan palayam, Perumampatti due to an increase in clay content of lower horizons. The CEC decreased with depth in the pedons of Ettimanickampatti and Keerapappambadi due to variation in clay and organic matter content (13).

The exchangeable bases had distinct pattern regarding their sequential dominance. In all the pedons, the order followed was Ca>Mg>Na>K. The

Table 3. Range and mean value of physico-chemical properties of Veerapandi block soil series

Ranges	Sand (%)	Clay (%)	Silt (%)	pH	EC (dsm ⁻¹)	OC (%)	CEC (meq/100 g)	Exchangeable cations (cmol(p ⁺)/kg ⁻¹)				ESP	BSP
								Ca	Mg	Na	K		
Min	48.3	5.0	1.7	6.3	0.1	0.07	8.5	4	0.8	0.5	0.05	4.2	70.8
Max	93.0	40.0	17.2	9.1	0.5	1.18	27.4	18.4	4.1	2.9	0.9	12.6	90.6
Mean	70.7	22.5	9.45	7.7	0.3	0.63	17.9	11.2	2.5	1.7	0.48	8.4	80.7

Ca²⁺ in soils ranged from 4.0 to 18.4 with mean value of 11.2 cmol(p⁺)/kg, Mg²⁺ ranged from 0.8 to 4.1, with mean value of 2.5 cmol(p⁺)/kg, Na²⁺ ranged from 0.5 to 2.9, with mean value of 1.7 cmol(p⁺), K⁺ ranged from 0.05 to 0.9, with mean value of 0.48 cmol (p⁺)/kg. The variation observed

in base saturation percentage (BSP) indicates the degree of leaching which was used as a diagnostic character for classifying the soil orders. High base saturation was due to high Ca²⁺ followed by Mg²⁺, Na²⁺ and K⁺(14).

Table 4. Classification of the soils identified.

Soil Series	Family or Higher Taxonomic Class	Ha	%
1. Anaikattipalayam	Fine mixed calcareous isohyperthermic Typic Haplustepts	846.8	8.65
2. Ayipalayam	Fine mixed isohypothermic Typic Rhodustalfs.	599.2	6.19
3. Ettimanickampatti	Fine loamy mixed isohyperthermic Typic Haplustepts.	295.2	3.01
4. Ilampillai	Fine loamy mixed calcareous isohyperthermic Typic Haplustepts.	1483.3	15.15
5. Keerapappambadi	Coarse loamy mixed isohyperthermic Typic Haplustepts	2139.0	21.85
6. Kurukkapuram	Fine loamy mixed calcareous isohyperthermic Typic Rhodustalfs,	791.2	8.08
7. Pattanam muniappan palayam	Fine mixed calcareous isohyperthermic Typic Rhodustalfs,	1317.2	13.45
8. Perumampatti	Fine loamy mixed calcareous isohypothermic Typic Haplustepts .	2259	23.00
9. Pethampatti	Coarse loamy mixed isohypothermic Typic Haplustepts.	60.5	0.62
		9791.4	100.0

Land Capability classification

The land capability classification grouping in the study area indicates that moderately good cultivated soils covering 71.4 percent area was affected

with moderate limitations of erosion, whereas the extent of moderate limitations of erosion and calcareousness was 6.74 per cent. Shallow soil and fairly good land occupied 21.85 percent in the block.

Table 5. Land Capability sub Classes in Veerapandi block

Land Capability Subclass	Mapping Unit	Area	
		ha	%
IIIs	KmsclA1, KmsclB2, KmslB2, KmslA1, PmslB2, PeslA1, PegsIB2, PescIA1, PeslB2, EtsclB2, EtsclA1, EtslA1, EtslB2, IpsclB2, IpsclA1, PmscA1, PmsclA1.	6992.5	71.41
IIIse	AyslB2, AyscA1, AyslA1, AysclB2, RplsA1,	659.7	6.74
IVs	KrslA1, KrsIB2, KrsclA1.	2139.0	21.85
	Total	9791.4	100.0

The land capability classes and LCC subclasses are shown in fig 4 and table 5. The available land resources, which include soil, topographic, water and associated climatic features, can deeply influence the cropping pattern and crop productivity in specified areas because each crop requires definite soil, climatic and site conditions for its optimal growth(1).

Land irrigability classification

The land irrigability groupings indicate that about 71.41 per cent area of the block may be used safely under irrigation. The erosion and calcareousness land covering 6.74 per cent of the area was moderately suitable for sustained use under irrigation, provided proper soil and water conservation measures to be adopted. About 21.85

per cent area represents lands possessing severe limitations of erosion and runoff, gravelliness, shallowness, and texture that require adequate care

and management in the block. The land irrigability classes and irrigability subclasses are shown in table 5 and table 6.

Table 6. Land Irrigability sub Classes in Veerapandi block

Land Irrigability Subclass	Mapping Unit	Area	
		Ha	%
2s	KmsclA1, KmsclB2, KmslB2, KmslA1, PpscA1, PmslB2, PeslA1, PegslB2, PescIA1, PeslB2, AkscIB2, AkscIA1, AkscA1, AkcA1, AkslA1, EtsclB2, EtsclA1, EtsIA1, EtsIB2, IpsclB2, IpsclA1, PmscA1, PmsclA1.	6992.7	71.41
2st	AyslB2, AyscA1, AyslA1, AysclB2, RplsA1.	659.7	6.74
3s	KrslA1, KrslB2, KrscIA1.	2139.0	21.85
	Total	9791.4	100.0

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