

ABSTRACT

1.	Survey area	:	Kandi Canal Stage II Project
2.	Geographical extent	:	Longitude: $75^{\circ} 56' 15''$ to $76^{\circ} 22' 40''$ E Latitude: $31^{\circ} 01' 12''$ to $31^{\circ} 32' 20''$ N
3.	Type of Survey	:	Detailed Soil Survey
4.	Based map used	:	Resourcesat-2, LISS-IV (FCC-Band 1,2,3) and SOI Toposheet
5.	Total Geographical area	:	43713 ha
6.	Agro-Climatic Zone	:	ZONE-VI (Trans-Ganga Plains Region)
7.	Period of Survey	:	08, Jan. 2018 to 28, Jan. 2018
8.	Scale of Survey	:	1:10,000
9.	Status of project	:	Kandi canal has been completed and tested by releasing water. Distribution systems work was held up/stopped due to vigilance enquiry.

A. Name of soil series and their extent

S. No.	Series Name	Number of Mapping Units	Area (ha)	Area (%)
1.	Balashpur (B)	7	11706	26.78
2.	Chagran (C)	6	8522	19.50
3.	Mahilawali (MW)	7	8333	19.06
4.	Nagal (N)	5	3950	9.04
5.	Rampur (R)	6	7283	16.66
6.	Brick Kiln	-	172	0.39
7.	Habitation	-	3702	8.47
8.	River	-	39	0.09
9.	Water Bodies	-	6	0.01
GRAND TOTAL		31	43713	100.00

B. Distribution of area under different Textural class

S. No.	Soil Textural Class	Area (ha)	Area (%)
1.	Sandy	15805	36.16
2.	Coarse Loamy	11706	26.78
3.	Fine Loamy	12283	28.10
4.	Brick Kiln	172	0.39
5.	Habitation	3702	8.47
6.	River	39	0.09
7.	Water Bodies	6	0.01
GRAND TOTAL		43713	100.00

C. Distribution of area under different Erosion class

S. No.	Erosion Class	Area (ha)	Area (%)
1.	Slight Erosion (e1)	18460	42.23
2.	Moderate Erosion (e2)	21109	48.29
3.	Severe Erosion (e3)	225	0.51
4.	Brick Kiln	172	0.39
5.	Habitation	3702	8.47
6.	River	39	0.09
7.	Water Bodies	6	0.01
GRAND TOTAL		43713	100.00

D. Distribution of area under different Slope class

S. No.	Slope Class	Area (ha)	Area (%)
1.	Nearly level slope (0-1%)	155	0.35
2.	Very gentle slope (1-3%)	33255	76.08
3.	Gentle slope (3-5%)	6384	14.60
4.	Brick Kiln	172	0.39
5.	Habitation	3702	8.47
6.	River	39	0.09
7.	Water Bodies	6	0.01
GRAND TOTAL		43713	100.00

E. Distribution of area under different Land use/ Land class

S. No.	Land use/ Land Class	Area (ha)	Area (%)
1.	Agriculture (Multiple crop)	31204	71.38
2.	Wasteland (suitable for agriculture)	8590	19.65
3.	Brick Kiln	172	0.39
4.	Habitation	3702	8.47
5.	River	39	0.09
6.	Water Bodies	6	0.01
GRAND TOTAL		43713	100.00

F. Physico-Chemical properties of Soil

S. No.	Series Name	Horizons	Range of pH		Range of EC		Range of ESP		Range of OC		Area (ha)	
			pH Value	Severity Class	EC Value	Severity Class	ESP Value	Severity Class	OC (%)	Class		
1.	Balashpur	Surface	7.50	Moderately alkaline	0.09	Normal	6.74	None to slight hazard	0.44	Low	11706	
		Sub-surface	7.20-7.30	Moderately alkaline	0.06-0.10	Normal	7.63-8.24	None to slight hazard	0.09-0.19	Very low		
2.	Chagran	Surface	7.51	Moderately alkaline	0.14	Normal	9.04	None to slight hazard	0.50	Low	8522	
		Sub-surface	8.51-8.75	Moderately to strongly alkaline	0.08-0.10	Normal	6.61-9.12	None to slight hazard	0.04-0.11	Very low		
3.	Mahilawali	Surface	7.10	Moderately alkaline	0.16	Normal	7.42	None to slight hazard	0.43	Low	8333	
		Sub-surface	7.67-7.76	Moderately alkaline	0.10-0.13	Normal	6.30-9.57	None to slight hazard	0.21-0.35	Very low to Low		
4.	Nagal	Surface	7.36	Moderately alkaline	0.31	Normal	13.36	None to slight hazard	0.44	Low	3950	
		Sub-surface	7.67-7.87	Moderately alkaline	0.25-0.29	Normal	4.63-10.28	None to slight hazard	0.17-0.31	Very low to Low		
5.	Rampur	Surface	6.44	Moderately acidic	0.14	Normal	4.80	None to slight hazard	0.21	Very low	7283	
		Sub-surface	6.23-6.45	Moderately acidic	0.13-0.16	Normal	7.37-9.48	None to slight hazard	0.04-0.15	Very low		
Miscellaneous											3919	
GRAND TOTAL											43713	

EC: Electrical Conductivity (dSm^{-1}), ESP: Exchangeable Sodium Percentage (%), OC: Organic Carbon (%)

G. Distribution of area under different Land Capability Class

S. No.	Land Capability Class	Name of Soil Series	Area (ha)	Area (%)
1.	II	Balashpur, Mahilawali, Nagal	15889	36.35
2.	III	Balashpur, Chagran, Mahilawali, Nagal, Rampur	22862	52.30
3.	IV	Chagran, Rampur	1043	2.39
4.	Brick Kiln	-	172	0.39
5.	Habitation	-	3702	8.47
6.	River		39	0.09
7.	Water Bodies	-	6	0.01
GRAND TOTAL			43713	100.00

□ Salient Features of the Area :

- Total 5 Soil Series were identified and mapped in the survey area. Maximum area is covered by Balashpur soil series occur in 26.78 % (11706 ha) followed by Chagran 19.50 % (8522 ha), Mahilawali 19.06 % (8333 ha), Rampur 16.66 % (7283 ha) and Nagal 9.04 % (3950 ha) as represented in table A.
- Total area under survey is about 43713 ha, out of which 3919 ha mapped under miscellaneous areas as brick kiln (172 ha), habitation (3702 ha), river (39 ha) and water bodies (6 ha).
- Sandy textural class covered the majority area of 15805 ha (36.16%) followed by fine loamy 12283 ha (28.10 %) and coarse loamy 11706 ha (26.78%) as shown in table B.
- All the soil series identified were mapped as very deep soils with an area of 39794 ha (91.03 %).
- Maximum area of 21109 ha (48.29 %) is affected by moderate erosion followed by slight erosion with an area of 18460 ha (42.23 %) and 225 ha (0.51 %) as severe erosion.
- About 33255 ha (76.08 %) area which falls under 1-3 per cent range of slope mapped as very gentle slope, 6384 ha (14.60 %) under 3-5 per cent range of slope mapped as gentle slope and 155 ha (0.35 %) area under 0-1 per cent range of slope mapped as nearly level slope.
- Out of surveyed area 43713 ha of the survey area, 27464 ha (62.83 %) area is classified under Land Capability Class III, 225 ha (0.51%) as Land Capability Class IV whereas 12105 ha (27.69 %) area falls under Land Capability Class II.
- Two land use/ land class have been identified in the surveyed area, i.e. agriculture with about 31204 ha area and wasteland with about 8590 ha area.
- There are three orders viz. Alfisols, Entisols and Inceptisols and four sub orders which have been found in this area. Number of great group found is four and sub group is five in the area.

HOW TO USE SOIL SURVEY REPORT

The present report furnishes a detailed account of various characteristics of the surveyed area like physiography, relief, geology, climate, natural vegetation, land use and soils. Detailed description of soils series recognized in the area and interpretation of different soil mapping units for various applied aspects of agricultural development, such as land use planning, soil and water management, soil conservation are given in relevant chapters. Different problems of the area have been depicted and corrective measures have also been suggested.

In order to use the report, the user will locate the area of his interest on the soil map appended with the report. On the map, each soil mapping unit has been delineated and represented by symbolic expression. The abbreviated symbol of mapping unit reflects information about the name of soil series, soil depth, surface texture, land gradient, erosion status and Terrace slope. The soil mapping unit is demarcated as B5cB1 where ‘B’ represents for ‘Balashpur’ Soil Series, ‘5’ for Very deep soil depth, ‘c’ for coarse loamy surface texture, ‘B’ for Very gentle slope (1-3%) and ‘1’ for None to slight erosion.

The details soil mapping units, their description and multipurpose interpretative groupings have been shown in Appendix- I (Guide to Soil Mapping Units). The Differentiating Morphological Description of Soil Series is furnished in Table-5 and morphological description of soil series is described in Appendix- II. Analytical methods are described in Appendix- IV. Glossary of Scientific terms used in this report is given in Appendix- V. The symbols used in the report are also illustrated in Appendix- VI.

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