

Checklist of soil analysis of some major localities of lower Tanawal, Pakistan

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From assessing the fertility status of soil, 51 soil samples were collected from different localities of Lower Tanawal Pakistan and analyzed in the Water and Soil Testing Laboratory Rawalpindi, Pakistan. The soil samples were found loam and clay loam in texture. Almost all soils have pH, from acidic to alkaline. The Organic Matter content was in the range of marginal and deficient. The K content is sufficient in maximum localities. E.C contents of the soil in all the localities were normal. The study will help to provide information about soil of the Lower Tanawal. As no research work was done on the soil analysis of the Lower Tanawal in past.

Keywords: Soil, Lower Tanawal, pH, Organic matter, Localities.

Introduction

The Lower Tanawal located in District Abbottabad, Province Khyber–Pakhtunkhwa, Pakistan. It is situated between 34°12'328 and 34°15'761 North latitude to 73°09'398 and 73°03'316 East longitudes. The Lower Tanawal located between the Mansehra in the North and the Haripur to the South, and nearby to the Northeast of the Tarbela Lake (Fig. 1 and 2). The border of Lower Tanawal start from the village Paswal which is away from Abbottabad on a distance of 10 km (Bibi *et al.*, 2019). The Lower Tanawal is part of the Lesser Himalayas (Hussain and Ilahi, 1991). In Lower Tanawal various terms are used for cultivated or uncultivated land. These terms are Rakkar, Maira, Kund or Nullah and Kalsi. Rakkar is bad stony land at the base of hills. Maira is mixture of clay and sandy land. Kund or Nullah is land lying on the edge of a stream. Kalsi is sloping land on hill side (Watson, 1907: Gazetteer of the Hazara, 2000).

Soil

Soils are the supporting factor for plant life and from which they obtained their support and the required essential nutrients. Each soil has its own physical and chemical properties. The agricultural productivity depends on the type of soil and its chemical and physical properties. To bring about valuable changes in soil management, a detailed knowledge of these properties of the soil is vital (Haq, 2004).

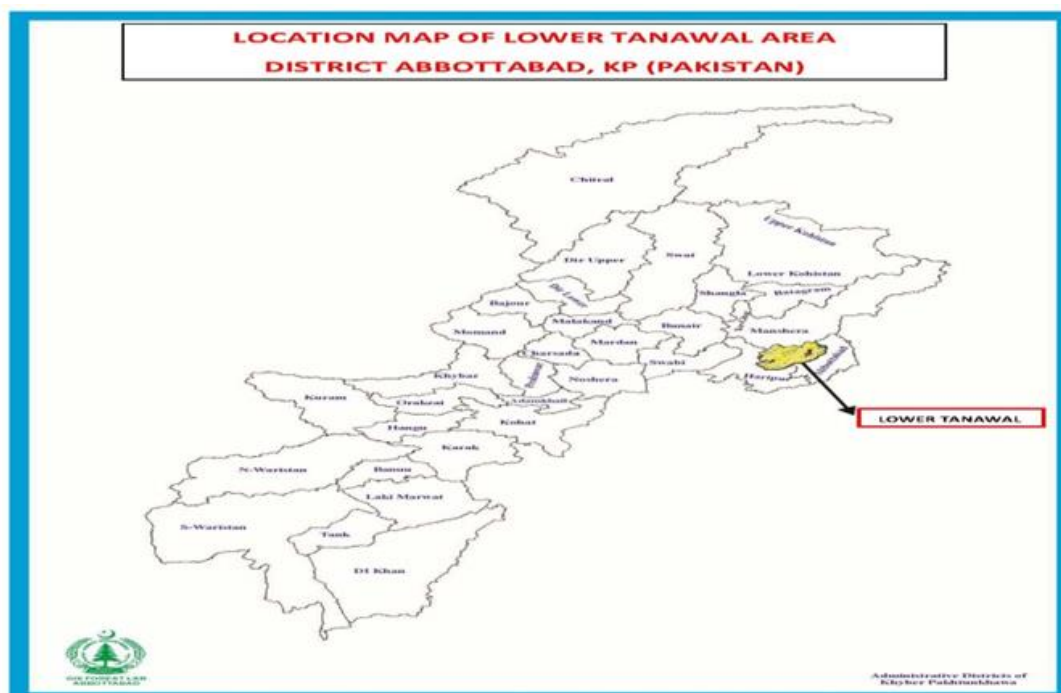


Fig. 1. Location map of lower tanawal, Pakistan.

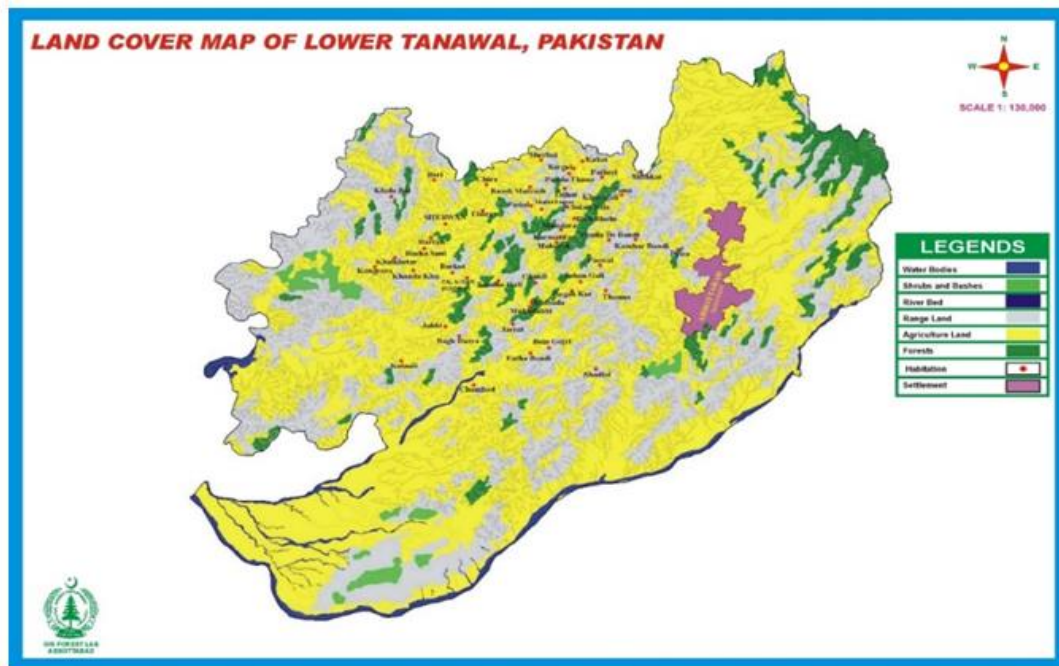


Fig. 2. Map of lower tanawal showing localities.

Materials and Methods

Soil collection

The Lower Tanawal, District Abbottabad, Pakistan was chosen for the soil analysis. This research study was conducted during 2016-2018. The 52 major localities of Lower Tanawal were selected for the purpose of soil analysis (Fig. 2). Soil samples were collected at the depth of 0-30 cm randomly from each locality. The soil samples were kept in polythene bags and labeled. The soil samples were chemically and physically analyzed in Water and Soil Testing Laboratory Rawalpindi, Pakistan.

Phosphorus and Potassium

The Phosphorus and Potassium contents of the soil of Lower Tanawal were determined with the help of Atomic Absorption Spectrophotometer (Fonge et al., 2011).

Organic matter

Walkley and Black's titration method was adopted to calculate the organic matter (Fonge et al., 2011).

Soil texture

Soil texture was determined by using Hydrometer method (Ghani and Amir, 2003).

Electrical conductivity

Electrical conductivity meter was used to determine the electrical conductivity (Khan et al., 2010).

Soil pH

The pH contents of the soil of the Lower Tanawal were taken with the help of pH Meter (Khan et al., 2010).

Results and Discussion

Phosphorus

The result of Phosphorus content of soil is given in (Table 1). From the table, it can be seen that p content ranged from 3.4 to 9.4 mg/kg. It can be determined from these results that there was a constant change of p content with respect to different localities out of 51 localities 41 localities have less than 7 mg/kg P.

Its mean these localities have insufficient p contents, while 10 localities (Garamri, Pehal, Pasiyal, Kangrora, Jabbi, Thalian, Jarral, Nara Doga, Khuliala, Khani Thethra) have more than 7 mg/kg p contents. The result suggests that in few localities p contents was satisfactory, but in most localities p contents was deficient. Similar results were noted by soltanpour 1985 (Table. 1).

Potassium

Result of k content of soil is given in Table 1. It can be noted from the table that k content ranged from 80 to 220 mg kg⁻¹. The result suggests that k content was sufficient in all the soils of all localities under study. Similar results were given by sulthanpour 1985 (Table. 1).

Organic matter

The O.M ranged was from 0.35-6.60. The results shown that in 12 localities (Thallay, Bagarian, Darrah, Khalora Gali, Mubarak, Gramri, Pehal, Baandi, Khuliala, Thalian Jabri, Rakran, have sufficient contents of Organic Matter, while other localities have low percentage of Organic Matter (Table. 1).

Soil texture

Soil texture of the Lower Tanawal localities was loam to clay loam. As 12 localities have clay Loam while other have loamy soil (Table. 1).

Electrical conductivity

The EC range of soil of Lower Tanawal was from 0.68 to 1.15. The results show that the soils of the all the localities were normal. Similar result reported by Bilal et al, 2017 (Table. 1).

Soil pH

All soil samples are acidic to alkaline in reaction. It was noted that 15 localities have acidic soil and remaining localities have alkaline soil. Oster and Shainberg reported that pH is not an accepted standard because it likely to be buffered by soil. Similar result described by Bilal et al. 2017 (Table. 1).

Table 1. Soil analysis of different localities of lower Tanawal, Pakistan.

S.No Name	Locality	E.C	pH	Organic matter	Phosphors/kg	Potassium mg/kg	Texture
1	Panduthana	0.78	7.04	0.65	5.5	120	Loam
2	Patheri Syedan	1.00	7.44	0.65	5.40	120	Loam
3	Karmati	0.93	7.22	0.70	6.20	120	Loam
4	Thallay	0.72	6.80	1.25	3.4	160	Clay loam
5	Mubarak	0.94	7.15	1.35	5.1	180	Clay loam
6	Mundarra	0.90	7.79	0.60	4.3	120	Loam
7	Siyaal	0.82	6.76	0.50	4.3	120	Loam
8	Sargal	1.02	7.28	0.75	4.7	120	Loam
9	Garamri	1.10	6.94	1.35	7.8	140	Clay loam
10	Pehal	0.95	7.18	1.50	8.1	200	Clay loam
11	Baandi	0.90	7.08	1.20	5.9	200	Clay loam
12	Pasiyal	0.72	7.08	0.85	9.4	120	Loam
13	Thathi Faqeer sb	0.84	7.37	0.70	5.3	120	Loam
14	Khani Thathiara	0.90	7.16	0.35	7.1	180	Loam
15	Fateh Bandi	0.75	7.16	0.60	4.6	120	Loam
16	Kotnali	0.98	7.08	0.35	6.1	120	Loam
17	Bachha Sani	0.87	7.04	0.60	5.4	120	Loam
18	Jarral	1.08	6.96	0.50	7.8	100	Loam
19	Nara Doga	1.15	7.04	0.65	9.0	80	Loam
20	Bandi Darah	0.95	6.69	0.45	8.2	140	Loam
21	Khuliala	0.98	6.59	1.25	7.1	200	Clay Loam
22	Thalian	0.86	7.13	1.20	5.9	200	Clay Loam
23	Jabbi	0.75	7.10	1.35	7.2	200	Clay Loam
24	Jabri	0.82	7.08	0.95	5.5	200	Clay loam
25	Rakraan	0.80	7.22	1.00	4.8	120	Loam
26	Kotha Doga	0.77	7.07	0.80	7.1	120	Loam
27	Pind.K. Khan	0.81	7.16	0.75	5.0	140	Loam
28	Sherwan Kalan	0.94	6.82	0.60	4.9	220	Loam
29	Thoray	0.86	6.90	0.70	5.5	220	Loam
30	Sherwan Khurd	0.90	7.19	0.50	5.6	100	Loam
31	Khalora Gali	0.98	7.12	1.25	6.1	200	Clay Loam
32	Takia Hal	1.05	7.15	0.90	7.0	120	Loam
33	Khnda Khoo	1.02	6.92	0.60	6.3	120	Loam
34	Kangrora	0.91	6.80	0.70	7.2	120	Loam
35	Habibabad	0.92	7.18	0.50	5.8	160	Loam
36	Khalkheter	1.02	7.20	0.60	6.9	160	Loam

37	Darrah	0.98	7.15	1.30	4.7	160	Clay loam
38	Bagarian	0.79	7.22	6.60	6.3	100	Loam
39	Sando Gali	0.81	7.17	0.50	5.8	120	Loam
40	Panyali	0.73	7.28	0.75	5.7	120	Loam
41	Gali Syedan	0.71	7.19	0.65	6.4	180	Loam
42	Chariala	0.74	6.94	0.70	7.8	120	Loam
43	Paswal	0.78	7.18	0.40	6.8	120	Loam
44	Patayan	0.92	7.32	0.50	5.4	120	Loam
45	Thandi khui	0.87	7.10	0.70	5.8	120	Loam
46	Chamhati	0.79	7.07	0.50	6.8	120	Loam
47	Khalabat	0.84	7.14	0.35	7.2	120	Loam
48	Thathi Kamila	0.68	7.28	0.60	6.8	120	Loam
49	Berri	0.75	6.90	0.40	5.3	100	Loam
50	Chakar Paaiyan	0.69	6.85	0.65	5.9	140	Loam
51	Purani Patheri	0.75	7.13	0.50	6.2	140	Loam

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