



Distribution of Phosphorus Fraction in Inceptisols of Azamgarh District, U.P

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Abstract

A phosphorus fractionation study was conducted in the surface soil of Azamgarh district, 2022-2024 U.P. by collection of surfaces (0-15 cm) soil samples from five village of each block of district (110 village) and prepare composite sample of each village. Analyses were conducted in the laboratory of department of Agricultural Chemistry and Soil Science, Shri Murali Manohar Town P.G. College, Ballia followed by standard procedures reported by different authors. Soils of every village were light textured soils, neutral to slight alkaline in nature. The distribution of the different phosphorus fraction in surface soils were viz. Saloid-P ranged from 23.00 to 53.87 ppm, Al-P 11.30 to 19.87 ppm, Fe-P 15.50 to 37.10 ppm the Reductant Soluble-P 15.75 to 44.55 ppm, Occluded-P 13.13 to 30.56 ppm, Ca-P 90.20 to 124.25 ppm, Organic-P 82.25 to 152.01 ppm with Total Phosphorus 369.30 to 481.05 ppm respectively in different village surface soils. Among the different fraction of P, total-P, Organic-P, Ca-P were observed in greater concentration while Al-P, Fe-P, Occl-P, RS-P, ESS-P were observed comparatively in small concentration.

Keywords: Phosphorus Fractions; Surface Soil; Villages Inceptisols; Azamgarh District

Introduction

As per essentiality, phosphorus plays an important role as structural component of the cell constituents and metabolically active compounds. The content and dynamics of different fraction of phosphorus play three significant role to the pool of phosphorus and their quantity, similarly the different form and fraction of phosphorus effectively act with different soil moisture, thermal and soil condition. Some phosphorus fraction have worked on high moisture level while are effective at field capacity condition, soil are affected by soil textural class and structural organization also. The quantity of available phosphorus have varied by soil change in pH and electrical conductivity also and several authors are also reported the low phosphorus efficiency due to fixation at varying level of acidity and basicity, mineral content and their nature also influence the phosphorus availability. In combination with dif-

ferent organic acids, phosphorus forms esters, phosphatides and phospholipids. As phosphoric ester of Inositol, phosphorus is a major component of phytin. Besides, phosphorus plays an important in energy transformation and metabolic process of plants. Phosphorus is not reduced in plants but remains in its highest oxidized form. Phosphorus in soils almost exclusively occurs as orthophosphate ions. The total P content is in the range of 0.02 to 0.15%. A large amount of this P is bound with soil organic matter and about 20-80 % of the total P in soils are in the forms of organic fraction. Broadly, P fractions in soils can be grouped into two non-occluded inorganic phosphate and occluded inorganic phosphate. The non-occluded fraction includes soil solution phosphate, adsorbed phosphate and some phosphate minerals. The occluded phosphate fraction is held by Fe and Al minerals often with in a skin of Fe hydroxyl compounds. The phosphorus fraction in different soil at different soil condition, by the influence of microorganism also showed the

different behaviors. The phosphorus fraction and their behaviour for total quantity of phosphorus and available amount phosphorus is meagre of crop production and fertilizers application rates. Therefore, an attempt was made in the present investigation to find out the magnitudes of phosphorus fraction in surface soil of Azamgarh district.

Materials and Methods

The surface soil samples collection investigation was carried out in 110 village of 22 block of Azamgarh district. Azamgarh district be situated in the eastern part of the Uttar Pradesh. It lies between the parallels of 26° 4' 19.4412" N latitude and 83° 11' 8.3544" E longitude and 64 meter sea elevation.

Soil sampling

For the study of phosphorus fraction, surface (0-15 cm) soil sample was collected from five spot of each village random and prepared composite sample. 110 soil samples were collected from a depth of (0-15 cm) and prepared composite samples were obtained from the farmer's fields across various village of Azamgarh district viz. Bhadewara, Mohanpatti, Khajuri, Jagana Pakar, Bagayicha, Jameen Dasaw, Bansgaonv, Gorathauni, Salarpatti, Etauri, Ajanpur, Nathpur, Dawatpur, Malanapur, Mehnajpur, Khajiabar, Gaddapur, Langarpur, Shabuddeenpu, Gulawa, Chakia, Karaila, Baharipur, Haraiya, Bayipar, Godhaura, Pardeshi Mor, Rampur, Tulasi-pur, Gonasar, Khalishpur, Manohi, Madiyapar, Kaunia Simirpur, Mohanpatti, Chaukikhaira, Tanakdeeh, Saraykhurasu, Mashirpur, Kota Bujurg, Gopalpur, Newada, Devanpur, Muradpur, Esirpur, Haidarabad, Meer Ahamdpur, Pushpnagar, MahuaraKhurd, Kishunipur, Kamharia, Kharihani, Karta, Kharagpur, Shivrampur, Jagdeeshpur, Karacha, Saraymeer, Hajipur, Basti, Thanauli, Mujaffarpur, Rampur, Ranipur, Ayiyayi, Bharodipur, Bantaria, Jamuyi, Palhana, Maraya, Salarpur, Jagdeeshpur, Husainpur, Pakari, Saraybhadi, Nati, Saharaja, Fattanpur, Rampur, Chakiya, Chamawan, Etkohia, Sudanipur, Kaneri, Gobaraha, Sethwal, Chak Sethawal, Jagannath Saray, Saiyadwara, Kotawa, NonaraSamed, Mahua Muralpur, Marukhapur, Nasiruddeenpur, Satiyaon, Nayipura, Awati, Janakipur, Madarsiya, Tahabarpur, Kabutara, Tarwa, Chauki Gajor, Munehari, Mokulpur, Barehatha, Mustafabad, Komalpur, Tajpur, Ganaha, Balpur respectively. The samples were air-dried, ground using a wooden mortar, sieved through a 2 mm mesh and subsequently stored in polythene bags for further analysis.

- **Saloids bound phosphate:** Saloids bound was determined by method given by Chang and Jackson (1957) as modified by Hedely modified Tissen and Moir
- **luminium phosphate:** Aluminium phosphate was determined by method given by Chang and Jackson (1957) as modified by Hedely modified Tissen and Moir
- **Iron phosphate:** Iron phosphate was determined by method given by Chang and Jackson (1957) as modified by Hedely modified Tissen and Moir.
- **Reductant soluble Fe-P:** determined by ascorbic acid method describe by Murphy and Riley (1962).
- **Occluded-phosphate:** Estimation of occluded Al-Fe-P were done by modified Chang and Jackson method of P-fraction (Ol-sen and Sommers 1982).
- **Calcium phosphate:** Determined by modified Chang and Jackson method (1957) of P fraction (Hedely modified Tissen and Moir).
- **Organic phosphorous:** Organic phosphate is determined by Bowman-Cole method (Bowman 1976). It was determined by subtracting the amount of inorganic phosphorus from total phosphorus.
- **Total phosphorus:** It was determined by 60% perchloric acid digestion mixture as mentioned in soil analysis (Piper 1996).

Results and Discussion

The various phosphorus fractions such as Saloid-P, Al-P, Fe-P, RS-P, Occluded-P, Ca-P, Na-P, Organic-P and total-P data of village and block wise is presented in (Table 1).

Saloid bound-P

The magnitude of saloid bound-P content in table-1 was revealed that the saloid bound-P of phosphorus was ranged between Ahiraula 39.77, Atraulia 38.20, Azamatgarh 37.56, Bilariaganj 39.24, Haraiya 38.72, Jahanaganj 38.24, Koilasa 42.63, Lalaganj 35.94, Maharaiganj 37.46, Martinganj 36.22, Mehnagar 41.58, Mir-japur 35.23, Mohammadpur 38.84, Palhana 40.07, Palhani 35.02, Pawai 33.98, Phoolpur 37.42, Rani Ki Sarai 35.24, Satiyaon 35.37, Tahbarpur 38.84, Tarwa 38.90, Thekma 38.67. Analogous observation have been reported by Sudhakaran *et al.* (2018). The greater value (44.64 ppm) of saloid bound-P was obtained from of Koilasa block. Whereas lowest (35.02 ppm) value was observed in of Pawai

block and mean value of ESS-P was 38.83 ppm. The greater amount of saloid bound-P in surface soil might be due to the slow transformation of soluble forms of P added into relatively less soluble forms with progress of times the similar finding has been given by Sood and Bhardwaj (1992) also.

Aluminium-P

The Aluminium-P in (table 1) surface soil ranged from Ahiraula 17.82, Atraulia 16.39, Azamatgarh 15.69, Bilariaganj 17.10, Haraiya 14.85, Jahanaganj 15.02, Koilasa 17.14, Lalganj 14.94, Maharajganj 14.50, Martinganj 15.87, Mehnagar 15.60, Mirjapur 13.55, Mohammadpur 15.39, Palhana 15.79, Palhani 14.49, Pawai 15.87, Phoolpur 17.24, Rani Ki Sarai 14.78, Satiyaon 15.97, Tahbarpur 17.79, Tarwa 14.94, Thekma 15.79. The less amount may have resulted from more weathered soil condition (Patel *et al.* 1992). The greater value (17.82 ppm) was obtained in Ahiraula block and lowest value (13.55 ppm) in Mirjapur block of Azamgarh district. Similar finding have been given by Niranjana *et al.* (1997) in surface soil of Karnataka.

Iron-P

The magnitude of iron-P content in table-1 was revealed that the Fe-P value in surface soil of different village and block varied between Ahiraula 25.32, Atraulia 29.50, Azamatgarh 27.90, Bilariaganj 24.06, Haraiya 20.54, Jahanaganj 29.06, Koilasa 24.89, Lalganj 20.64, Maharajganj 25.34, Martinganj 16.82, Mehnagar 28.35, Mirjapur 19.31, Mohammadpur 18.22, Palhana 26.58, Palhani 22.97, Pawai 22.45, Phoolpur 20.62, Rani Ki Sarai 23.12, Satiyaon 26.49, Tahbarpur 26.89, Tarwa 26.44, Thekma 27.19. Azamatgarh block of Azamgarh district recorded greater value (33.86 ppm) and Martinganj block of Azamgarh district was recorded lowest value (16.82 ppm) and average (value 25.02 ppm) of Fe-P. These results were in concomite with the observation of Patel *et al.* (1992) and Sharma (2007) in soils of Punjab. The Fe-P in these soils might be attributed to presence of sesquioxides.

Reductant soluble-P

The RS-P was revealed that the reductant soluble-P is ranged between Ahiraula 30.32, Atraulia 31.04, Azamatgarh 29.52, Bilariaganj 31.39, Haraiya 28.93, Jahanaganj 28.02, Koilasa 28.58, Lalganj 28.07, Maharajganj 27.98, Martinganj 34.21, Mehnagar 26.50, Mirjapur 26.50, Mohammadpur 32.24, Palhana 36.16, Palhani

33.02, Pawai 32.59, Phoolpur 26.20, Rani Ki Sarai 27.68, Satiyaon 28.28, Tahbarpur 26.76, Tarwa 29.04, Thekma 29.39. The lowest value of reductant soluble-P was recorded (26.20 ppm) in Palhana block of Azamgarh district whereas greater value (36.16 ppm) in Phoolpur bolck of Azamgarh district. The average value was (29.90 ppm) (table 1). The reductant soluble-P in these soils may be due to weathered condition of the soil. Similar observation have been reported by Singh *et al.* (2014) in alluvial soils of Uttar Pradesh.

Occluded -P

The Occluded -P obtained in soil varied from different blocks of Azamgarh distict of Ahiraula 22.12, Atraulia 22.51, Azamatgarh 22.44, Bilariaganj 21.46, Haraiya 22.67, Jahanaganj 22.08, Koilasa 19.96, Lalganj 21.71, Maharajganj 17.88, Martinganj 19.65, Mehnagar 21.46, Mirjapur 21.67, Mohammadpur 21.42, Palhana 20.76, Palhani 16.93, Pawai 20.71, Phoolpur 20.28, Rani Ki Sarai 20.47, Satiyaon 20.70, Tahbarpur 20.08, Tarwa 20.28, Thekma 21.46, respectively. These results were found to be something similar campared to observation made by Mitran *et al.* (2015). The greater value of occluded-P (22.67 ppm) was recorded in Haraiya block of Azamgarh district and greater were as lowest value of (16.93 ppm) Palhani block of Azamgarh district. The presence of occluded-P in sulphate soil might be attributed the weathering of the soil. Analogous observation have been reported by Gupta *et al.* (2022) in different soil orders of Indo-Gangetic plains of India.

Calcium-P

Results in table 1 indicated that the calcium-P content of Azamgarh district Ahiraula 117.51, Atraulia 103.01, Azamatgarh 111.48, Bilariaganj 115.68, Haraiya 104.32, Jahanaganj 113.42, Koilasa 111.36, Lalganj 106.96, Maharajganj 110.40, Martinganj 113.25, Mehnagar 113.28, Mirjapur 101.80, Mohammadpur 113.42, Palhana 113.56, Palhani 104.75, Pawai 114.40, Phoolpur 108.04, Rani Ki Sarai 107.46, Satiyaon 118.24, Tahbarpur 108.60, Tarwa 109.43, Thekma 111.24. Sathiyaon block of Azamgarh district to recorded greater value (118.20 ppm) and Mirjapur block have lowest value (101.80 ppm). The calcium-P of soil ranged from 101.80 to 118.20 ppm with a mean value of 110.71 ppm (table-1). Higher amount of Ca-P as compare to other inorganic-P from may be due to more amount of exchangeable Calcium in these soils. Similar results were also obtained by Singh *et al.* (2003) in the soils of Vertisols.

Organic-P

Organic-P status (table.1) of rice and wheat growing soils of Azamgarh district of Ahiraula 122.34, Atraulia 106.82, Azamatgarh 93.85, Bilariaganj 103.65, Haraiya 112.91, Jahanaganj 104.67, Koilasa 108.93, Lalganj 118.46, Maharajganj 116.65, Martinganj 114.25, Mehnagar 116.33, Mirjapur 127.34, Mohammadpur 118.59, Palhana 120.51, Palhani 127.94, Pawai 120.26, Phoolpur 122.45, Rani Ki Sarai 113.75, Satiyaon 119.99, Tahbarpur 117.71, Tarwa 111.02, Thekma 129.95. The organic-P content varied in soils under study from 82.25 to 152.01 ppm with mean value of (115.85 ppm). The lowest value of organic-P was obtained in Azamatgarh block of Azamgarh district (82.25 ppm) and greater value recorded in Thekma block of Azamgarh district. Tantamount observation has been reported by Gupta *et al.* (2020) in phosphorus fractions in Ultisols of Meghalaya.

Total-P

Total-P content in table-1 surface soil of different village under the block of Azamgarh district was Ahiraula 429.87, Atraulia 412.50, Azamatgarh 397.37, Bilariaganj 385.23, Haraiya 403.34, Jahanaganj 401.48, Koilasa 401.07, Lalganj 423.48, Maharajganj 419.70, Martinganj 402.45, Mehnagar 420.40, Mirjapur 430.71, Mohammadpur 423.37, Palhana 433.39, Palhani 434.77, Pawai 421.26, Phoolpur 426.02, Rani Ki Sarai 421.95, Satiyaon 427.45, Tahbarpur 430.10, Tarwa 396.25 and Thekma 436.38. Similar results were also obtained by Mahmood *et al.* (2007). The block of Tahbarpur of Azamgarh district recorded greater value of Total-P 481.02 ppm and Koilasa block of Azamgarh district have lowest value 378.50 ppm and average value of 389.57 ppm of total-P. It might be higher smectite type clay mineral in those soil responsible for magnitude of total-P. These results were in concomit with the observation of Devra *et al.* (2014) in different phosphorus fractions in western plain of Rajasthan [1-17].

Blocks of Azamgarh	Village of Azamgarh district	ESS-P	Al-P	Fe-P	RS-P	Occl-P	Ca-P	Org-P	Total-P
Ahiraula	Bhadewara	38.70	16.50	32.62	37.62	27.21	120.62	142.00	480.62
	Mohanpatti	46.45	19.87	25.02	33.12	17.76	122.75	136.00	461.50
	Khajuri	40.75	16.40	17.50	24.37	24.38	114.42	102.75	380.50
	Jagana Pakar	32.62	16.12	22.00	31.75	20.16	123.25	105.20	389.25
	Bagayicha	40.37	20.25	29.50	24.76	21.13	106.51	125.75	437.50
	Mean	39.77	17.82	25.32	30.32	22.12	117.51	122.34	429.87
Atraulia	Jameen Dasaw	39.50	19.85	32.00	33.12	20.42	95.20	121.50	437.12
	Bansgaonv	30.63	14.57	31.60	29.23	30.56	104.00	112.25	418.13
	Gorathauni	46.32	15.33	28.55	30.12	23.13	94.25	90.75	383.02
	Salarpatti	33.08	14.87	21.25	33.62	18.25	117.62	95.60	398.12
	Etauri	41.50	17.35	34.12	29.15	20.21	104.00	114.00	426.14
	Mean	38.20	16.39	29.50	31.04	22.51	103.01	106.82	412.50
Azamatgarh	Ajanpur	40.56	16.50	26.45	24.37	27.00	107.25	105.43	402.36
	Nathpur	31.37	15.12	36.55	26.25	23.51	106.63	95.25	389.12
	Dawatpur	39.25	13.62	23.75	30.12	16.50	116.52	97.86	398.27
	Malanapur	34.25	14.25	32.10	36.25	21.05	112.50	82.25	388.12
	Mehnajpur	42.38	19.00	20.65	30.62	24.14	114.51	88.50	389.00
	Mean	37.56	15.69	27.90	29.52	22.44	111.48	93.85	393.37

Bilariaganj	Khajiabar	32.62	16.22	22.00	31.75	16.80	108.51	96.25	369.30
	Gaddapur	46.75	16.50	32.62	35.60	27.21	120.62	94.25	349.62
	Langarpur	44.50	19.87	25.32	33.52	17.76	114.42	110.00	395.50
	Shabuddeenpur	39.75	16.40	18.40	24.37	24.38	119.75	128.00	436.50
	Gulawa	32.62	16.52	22.00	31.75	21.16	115.12	89.75	375.25
	Mean	39.24	17.10	24.06	31.39	21.46	115.68	103.65	385.23
Haraiya	Chakia	40.52	18.20	18.62	24.76	22.62	98.25	130.25	390.15
	Karaila	43.86	11.30	21.00	26.75	30.14	117.14	108.50	421.12
	Baharipur	40.13	14.55	24.00	29.23	23.13	104.00	123.00	416.32
	Haraiya	36.12	15.37	23.62	31.32	17.25	98.25	104.05	409.02
	Bayipar	33.00	14.87	15.50	32.62	20.21	104.00	98.75	380.13
	Mean	38.72	14.85	20.54	28.93	22.67	104.32	112.91	403.34
Jahanaganj	Godhaura	42.00	17.25	35.00	21.87	24.51	107.25	128.50	421.10
	Pardeshi Mor	34.37	14.87	22.87	35.62	16.50	116.50	99.25	386.13
	Rampur	41.37	15.12	29.35	26.25	21.05	114.51	105.00	408.12
	Tulasipur	39.25	13.62	35.50	30.12	24.14	107.63	101.25	393.00
	Gonasar	34.25	14.25	22.62	26.25	24.21	121.25	89.35	399.05
	Mean	38.24	15.02	29.06	28.02	22.08	113.42	104.67	401.48
Koilasa	Khalishpur	53.87	18.25	25.62	29.50	17.75	106.51	135.44	418.50
	Manohi	30.37	14.62	18.25	36.37	20.38	102.62	98.65	378.50
	Madiyapar	38.75	16.50	30.25	27.60	21.16	114.42	92.70	385.25
	Kaunia Simirpur	49.50	19.87	13.25	26.42	21.13	109.00	113.65	414.50
	Mohanpatti	40.70	16.50	37.10	24.37	19.41	124.25	104.23	408.63
	Mean	42.63	17.14	24.89	28.85	19.96	111.36	108.93	401.07
Lalganj	Chaukikhaira	40.13	14.87	16.00	26.23	23.13	95.20	119.50	426.03
	Tanakdeeh	24.12	15.37	23.62	33.12	18.25	122.75	128.78	450.10
	Saraykhurasu	39.22	14.87	15.50	33.62	20.21	92.25	133.05	469.15
	Mashirpur	32.50	17.35	33.62	24.15	27.21	104.00	108.25	390.62
	Kota Bujurg	43.75	12.25	14.50	23.25	19.76	120.62	102.74	381.50
	Mean	35.94	14.94	20.64	28.07	21.71	106.96	118.46	423.48
Maharajganj	Gopalpur	46.10	15.37	23.62	23.82	19.41	114.00	120.50	421.63
	Newada	36.25	14.35	15.37	24.15	19.10	117.62	126.00	434.50
	Devanpur	24.35	14.07	22.87	35.60	20.62	104.00	133.25	448.16
	Muradpur	41.37	15.12	29.35	26.25	17.14	107.00	100.25	395.18
	Esirpur	39.25	13.62	35.50	30.12	13.13	109.40	103.25	399.04
	Mean	37.46	14.50	25.34	27.98	17.88	110.40	116.65	419.70
Martinganj	Haidarabad	38.32	14.87	15.50	33.42	16.87	107.25	116.00	397.43
	Meer Ahamdpur	33.25	13.50	16.87	30.52	19.60	116.52	119.75	417.36
	Pushpnagar	30.37	14.62	18.25	36.37	24.51	111.50	95.75	378.12
	Mahuara Khurd	40.70	16.50	20.25	37.65	16.24	114.51	127.00	430.23
	Kishunipur	38.50	19.87	13.25	33.12	21.05	116.50	112.75	389.12
	Mean	36.22	15.87	16.82	34.21	19.65	113.25	114.25	402.45

Mehnagar	Kamharia	41.68	17.35	33.62	29.15	16.80	106.51	103.00	398.33
	Kharihani	42.00	16.25	35.00	21.87	26.21	113.42	128.75	436.56
	Karta	37.35	18.25	25.62	25.50	17.76	115.12	91.65	391.30
	Kharagpur	46.75	11.30	21.00	26.75	24.38	118.62	126.75	433.60
	Shivrampur	40.13	14.87	26.54	29.23	22.16	112.75	131.50	442.25
	Mean	41.58	15.60	28.35	26.50	21.46	113.28	116.33	420.40
Mirjapur	Jagdeeshpur	43.50	11.20	14.50	23.25	20.62	90.20	117.25	390.12
	Karacha	30.75	12.25	14.50	23.25	29.14	104.00	124.00	415.13
	Saraymeer	36.25	14.35	15.37	24.15	17.13	95.20	127.20	433.04
	Hajipur	24.35	14.87	22.84	35.62	18.25	102.00	130.25	441.11
	Basti	41.30	15.12	29.35	26.25	23.21	117.62	138.00	474.16
	Mean	35.23	13.55	19.31	26.50	21.67	101.80	127.34	430.71
Mohammadpur	Thanauli	36.25	14.37	15.58	36.25	24.51	121.25	132.50	451.22
	Mujaffarpur	47.12	17.00	20.15	40.12	16.22	107.63	119.06	419.45
	Rampur	25.75	14.50	16.87	25.75	18.05	114.51	96.25	394.66
	Ranipur	30.37	14.62	18.25	30.37	24.14	107.25	114.45	408.22
	Ayiyayi	29.75	16.50	20.25	28.75	24.21	116.50	130.72	443.34
	Mean	33.84	15.39	18.22	32.24	21.42	113.42	118.59	423.37
Palhana	Bharodipur	40.37	15.12	29.35	21.37	17.76	114.42	106.00	398.50
	Bantaria	39.25	13.62	35.50	39.25	24.38	116.62	120.05	433.50
	Jamuyi	34.25	14.25	22.62	34.25	21.16	106.51	128.65	448.25
	Palhana	41.38	19.00	25.32	41.38	21.13	121.25	114.00	424.50
	Maraya	45.12	17.00	20.15	44.55	19.41	109.00	133.85	462.23
	Mean	40.07	15.79	26.58	36.16	20.76	113.56	120.51	433.39
Palhani	Salarpur	39.25	13.62	18.50	39.25	13.13	104.00	145.08	463.03
	Jagdeeshpur	41.50	17.35	33.62	41.50	18.25	92.55	126.34	438.25
	Husainpur	43.75	12.25	24.50	43.75	20.21	111.50	112.00	389.13
	Pakari	26.25	14.37	15.37	16.25	17.25	120.50	133.78	454.25
	Saraybhadi	24.37	14.87	22.87	24.37	15.85	95.20	122.50	429.22
	Mean	35.02	14.49	22.97	33.02	16.93	104.75	127.94	434.77
Pawai	Nati	34.25	14.25	22.62	34.25	21.05	107.63	110.22	394.12
	Saharaja	31.38	19.00	24.37	42.38	24.14	115.12	115.00	405.00
	Fattanpur	45.18	17.00	30.15	40.22	24.21	111.50	117.65	428.01
	Rampur	28.75	14.50	16.87	15.75	18.12	116.50	132.25	448.12
	Chakiya	30.37	14.62	18.25	30.37	16.07	121.25	128.00	431.09
	Mean	33.98	15.87	22.45	32.59	20.71	114.40	120.62	421.26
Phoolpur	Chamawan	26.25	14.37	15.37	24.15	21.16	106.51	129.25	441.24
	Etkohia	32.62	16.12	20.52	31.75	21.13	108.05	101.00	384.50
	Sudanipur	40.37	20.25	18.62	24.76	19.41	112.25	129.75	443.63
	Kaneri	42.00	17.25	25.00	20.85	19.10	109.40	113.50	394.50
	Gobaraha	45.87	18.25	23.62	29.50	20.62	104.00	138.75	466.23
	Mean	37.42	17.24	20.62	26.20	20.28	108.04	122.45	426.02

Rani Ki Sarai	Sethwal	34.37	14.87	22.87	35.62	20.21	111.50	128.75	445.09
	Chak Sethawal	31.37	15.12	29.35	26.25	17.25	119.60	121.25	438.78
	Jagannath Saray	40.50	17.35	33.62	29.15	16.87	95.20	88.00	390.44
	Saiyadwara	43.75	12.22	14.50	23.25	23.55	116.52	98.75	384.34
	Kotawa	26.25	14.37	15.30	24.15	24.51	94.51	132.00	451.12
	Mean	35.24	14.78	23.12	27.68	20.47	107.46	113.75	421.95
Satiyaon	NonaraSameda	40.37	15.12	29.35	26.25	24.21	111.50	124.42	429.50
	Mahua Muralpur	44.25	14.25	22.62	36.25	18.12	120.62	118.08	417.22
	Marukhapur	31.38	19.00	24.37	30.62	16.22	122.75	128.25	442.32
	Nasiruddeenpur	35.12	17.00	30.15	25.70	27.21	115.12	97.75	393.12
	Satiyaon	25.75	14.50	26.00	22.62	17.76	121.25	131.48	455.09
	Mean	35.37	15.97	26.49	28.28	20.70	118.24	119.99	427.45
Tahbarpur	Nayipura	40.50	19.87	23.25	31.12	19.41	104.00	140.75	481.05
	Awati	38.75	16.50	37.10	24.37	19.10	109.00	130.68	454.50
	Janakipur	32.62	15.12	20.52	31.75	13.13	104.00	90.35	389.12
	Madarsiya	40.37	20.25	18.62	24.76	28.14	117.62	99.52	397.06
	Tahabarpur	42.00	17.25	35.00	21.80	20.62	108.40	127.25	428.78
	Mean	38.84	17.79	26.89	26.76	20.08	108.60	117.71	430.10
Tarwa	Kabutara	40.13	14.87	25.00	29.23	21.16	106.51	112.75	389.22
	ChaukiGajor	46.12	15.37	23.62	33.00	21.13	104.00	116.56	399.50
	Munehari	23.00	14.87	15.50	30.60	19.41	119.00	96.04	371.56
	Mokalpur	41.50	17.35	33.62	29.15	19.10	113.25	100.50	394.90
	Barehatha	43.75	12.25	34.50	23.25	20.62	104.40	129.25	426.10
	Mean	38.90	14.94	26.44	29.04	20.28	109.43	111.02	396.25
Thekma	Mustafabad	41.37	15.12	29.35	25.25	20.21	93.20	152.01	471.15
	Komalpur	39.25	13.62	35.50	30.12	17.25	114.51	129.75	426.02
	Tajpur	34.25	14.25	22.62	36.25	18.80	111.50	98.00	399.25
	Ganaha	31.38	19.00	18.35	28.62	26.55	120.50	127.75	423.43
	Balpur	47.12	17.00	30.15	26.75	24.51	116.52	142.25	462.09
	Mean	38.67	15.79	27.19	29.39	21.46	111.24	129.95	436.38
		37.64	15.75	24.21	29.66	20.85	110.52	115.85	417.02

Table 1: Concentration (ppm) of phosphorus fractions in soils of Azamgarh district.

Conclusions

The magnitude of phosphorus fraction and their available forms are depending on many soil properties and conditions. The information of different fraction and stock of phosphorus in soil will helps to new planning for fertilizers recommendation and land use planning, it will helpful to monitor the benefit to cost ratio, eutrophication as well as nutritive value of food products. Therefore, to

address the organic and inorganic source of phosphorus as fertilizers, manure, biofertilizers and natural sources will be vital to revealed the forms and behaviour in the soil of Ganga and Ghaghara basin of Azamgarh district for foods and nutritional security as well as environmental safety, there where diverse farming system are adopting. Therefore, in the soil of Azamgarh district, the accurate use of fertilizers to the farmers of the area.

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