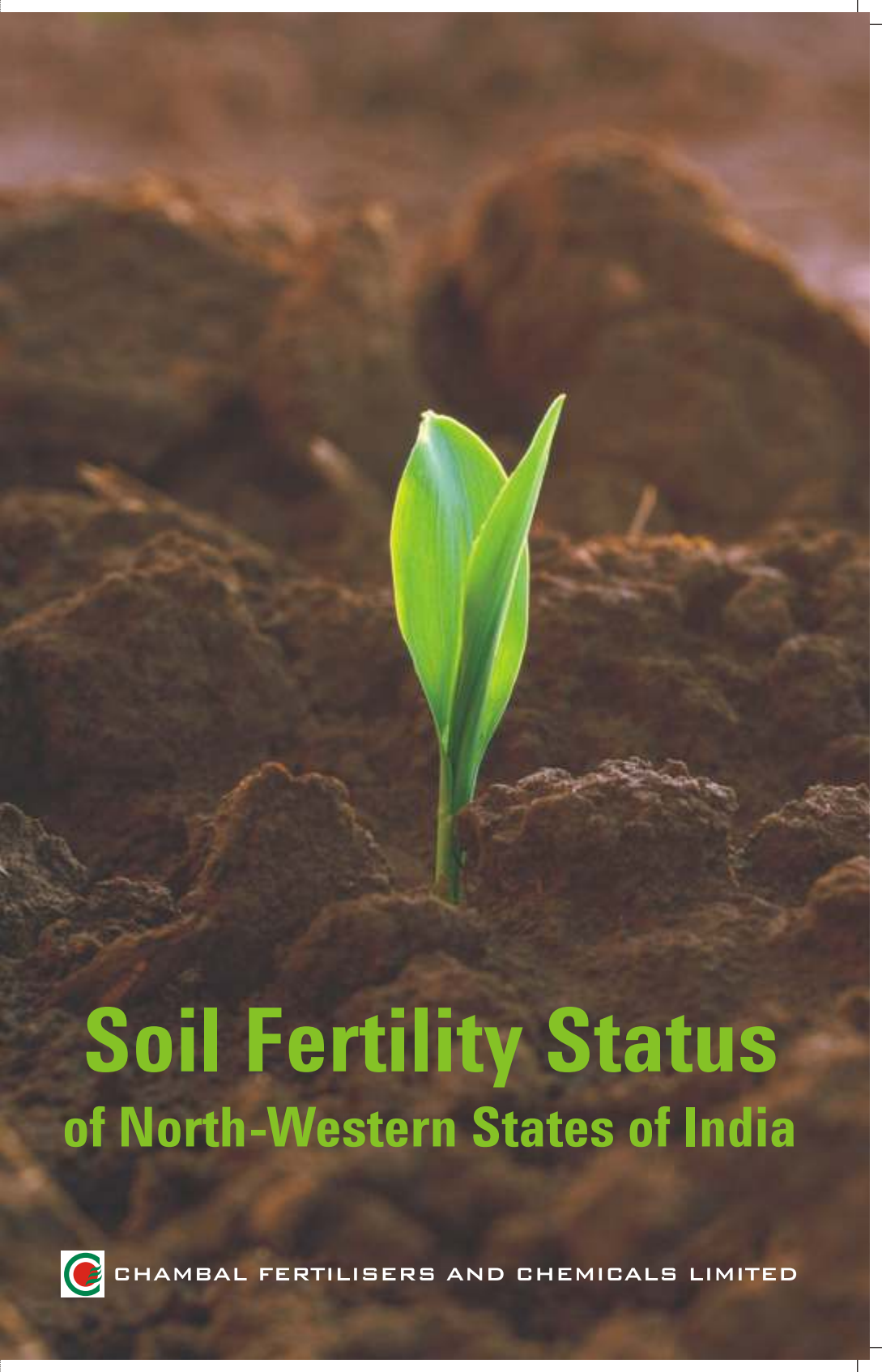


Soil Fertility Status

of North-Western States of India

CHAMBAL FERTILISERS AND CHEMICALS LIMITED

Preface

Land degradation, either natural or induced by humans, is a continuing process. It has become, however, an important issue through its adverse effects on national natural resources, food security and the livelihood of the population. Food security is directly related to the ability of land to support the population.

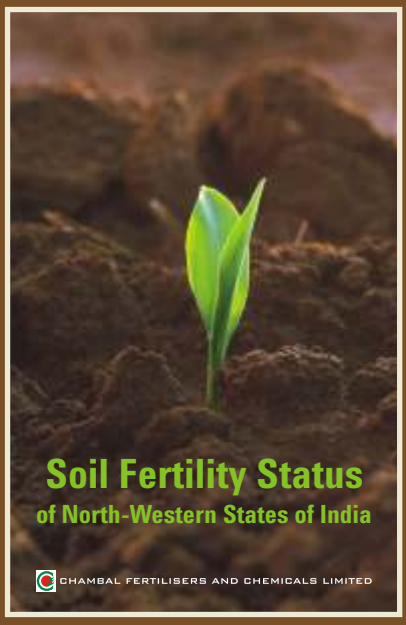
Causes for land degradation are numerous and include decline of soil fertility, development of acidity, salinization, alkalization, deterioration of soil structure, accelerated wind and water erosion, loss of organic matter and biodiversity. Efforts to restore productivity of a degraded land must be coupled with efforts to recognize productive capacity of soil resources. Restoring the soil quality for crop production through the appropriate soil management and conservation techniques is important for all nations, primarily those at risk with respect to food security.

Although cost effective options are available to restore the soil quality and productivity, there is a need to increase awareness at high policy-making level with sound scientific evidence. It is, therefore, important to develop spatial or other databases about the extent of soil degradation, its biophysical, economic and social impacts as well as successful examples of soil productivity improvement programmes.

The agriculture will not be sustainable unless soil health is managed scientifically to meet present and future needs. The long term fertilizer trials have clearly indicated that balanced and integrated nutrient management improves the soil organic matter content as well as soil quality which is an index of better soil health.

An attempt has been made in this booklet to find out the soil fertility status and prepare soil fertility maps of North-Western states with respect to different soil parameters. 6.96 lacs samples were analysed in two Agricultural Development Laboratories located at Agra (Uttar Pradesh) and Sriganganagar (Rajasthan) and suggestions were given for ways and means to improve soil health for the benefit of all concerned in improving crop productivity.

This booklet has been written with an objective to share the information with the Agricultural Universities/ State Department of Agriculture/ Krishi Vigyan Kendras/ Soil Testing Laboratories, Scientists & Extension Workers and also to promote soil test based plant nutrient application for the benefit of the farming community.



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About Chambal...

Chambal Fertilisers and Chemicals Limited is one of the largest private sector fertilizer producer in India. It was promoted by Zuari Industries Limited in the year 1985. Its two hi-tech nitrogenous fertilizer (Urea) plants are located at Gadepan in Kota district of Rajasthan. The two plants produce about 2 million MT of Urea per annum. The first plant was commissioned in 1993 and second plant in 1999. These plants use state-of-the-art technology from Denmark, Italy, United States and Japan.

Chambal Fertilisers caters to the need of the farmers in eleven states in northern, eastern, central and western regions of India and is the lead Fertiliser Supplier in the state of Rajasthan. The company has a vast marketing network comprising 11 regional offices, 1700 dealers and 20,000 village level outlets.

The company has donned the mantle of providing all agri-products through 'single window' to enable the farmer to buy all products from one source. The company dealers provide Urea and other agri-inputs like DAP, MOP, SSP, Pesticides and Seeds. Most of products are sourced from reputed suppliers and sold under the 'Uttam Umbrella brand'. Today, the company has attained leadership position in the pesticides business in North India.

To promote sustainable farming products, Chambal has a well structured farmer advisory programme known as 'Uttam Bandhan'. Under this programme, the company organizes crop seminars, products and field demonstrations and farmer meets. Soil and water analysis is also conducted at Chambal's laboratories and based on the results, Chambal experts emphasize on balance use of fertilizers.

To encourage the new age farmer, a website, 'uttamkrishi.com' provides information on weather, suitable cropping techniques and markets in Hindi language. 'Hello Uttam' toll- free telephonic helpline (1800 180 5550) has been steup to answer the queries raised by farmers. Unemployed youth from villages are enrolled as 'Uttam Krishi Salahakars'. They are trained in the latest farming techniques and provide specialised services to farmers.

For inculcating the practice of balanced and economical use of fertilizers, Chambal extends its soil testing facility located at Agra (U.P.) and Sriganganagar (Rajasthan) to more than 60,000 farmers of North-West India every year. These Agricultural Development Laboratories are well equipped with most sophisticated ultra modern electronic instruments including AAS for micronutrient analysis and run by the qualified professionals. The soil testing service has immensely contributed to raising farm output and income in North-West regions of India.

Chambal is constantly trying to improve the quality of rural life by rendering agri-input and its related knowledge, to make best use of all these, in addition to its efforts to fulfill social initiatives like elementary education, technical training, elementary health care, women empowerment, rural infrastructure, sports, arts and culture. Chambal Fertiliser is also committed towards environment in spheres like wildlife preservation, water management etc.

Introduction...

Agriculture is the main occupation of the majority of rural household in India, a bulk of which comprise tiny land holdings. About 65 percent of the population of India depends on agriculture. Agriculture is the backbone of Indian economy and soil is the most important basic resource for agricultural production which provides water, nutrients and anchorage to crop plants. But it is not an in exhaustive store of nutrients. For higher production, soil needs higher inputs particularly organic manures and fertilizers; and its productivity and inputs' efficiency also depends on soil management. Thus, soil health management for optimizing productivity without endangering long term sustainability and environmental safety should be the top priority of agenda for agricultural development.

There is also an urgent need of continuously enhancing productivity of soil to produce additional food grains for ever increasing population in our country. The National Academy of Agricultural Sciences (Kanwar & Katyal, 1997) estimated that India may need 301 million tones food grains by 2025, if the present trend of population growth does not decline. Amongst the factors of production, agricultural inputs, like fertilizers, insecticides, pesticides have played a key role in increasing production of food grains and other crops in India since 1960. According to FAO, 50 percent increase in food-grains production is attributed to fertilizer use.

To get maximum benefit from fertilizer, right quantity should be applied at right time, right place through quality source and combination to minimize nutrient losses and reduce hazards of fertilizer related environmental population.

Low fertility of Indian soils is the major constraint to achieve high productivity goals. In

both agriculturally advanced irrigated ecosystems and less- endowed rainfed regions, nutrient replenishment through fertilizers and manures remains far below crop removal, thus causing the mining of nutrient reserves over years. Widespread deficiencies of N, P. K, S, Zn, Fe, B etc have emerged and significant crop responses to application of these nutrients have been reported. The deficiencies are so intense and severe that visual symptoms are very often observed in major crops.

Soil fertility decline is naturally more alarming in intensive cultivated regions wherein nutrient withdrawals by crop are high and replenishment is not only inadequate in favour of N. Soil nutrient depletion has grave implications in term of (i) more acute and wide spread deficiencies, (ii) declining nutrient use efficiency and returns from money spent on nutrient and other inputs, (iii) a weakened foundation for high yielding sustainable farming and (iv) escalating remedial costs for rebuilding depleted soils. Therefore, for maintaining soil health and sustainable agricultural production, replenishment of macro and micronutrients and addition of soil amendments is a must in the soil to obtain good crop yields. If their status in the soil is known before the crop is sown, it provides a sound basis for determining the nutrients requirements for the desired production. Soil testing is the practical application of science in this direction. It helps in assessing the nutrient supplying capacity of soil and providing site specific fertilizer recommendations. It also helps in identifying problem with the soil and suggesting their reclamation for better fertilizer use efficiency and improving soil health.

Methodology...

Following procedure was followed for collection, analysis, reporting and preparation of soil fertility maps:

Soil Samples Collection:

Since Sept. 1995 to Sept 2011, around 6.96 lac surface soil samples (0-15 cm) were collected by Chambal's field staff and farmers as per standard procedure from different villages of Rajasthan, Haryana, Punjab, Uttar Pradesh, Madhya Pradesh, Chhattisgarh and Gujarat. Collected soil samples were sent to ADLs for the analysis. Some samples were directly received from the farmers.

Soil Analysis:

The soil samples were processed and stored in the lab at suitable room temperature; and analysed for pH, Electrical conductivity, Organic Carbon (%), available P_2O_5 and K_2O in general, available sulphur and available micronutrients (Zn, Fe, Cu, Mn & B) in particular cases by using standard methods as per details given below:

a) Soil Reaction (pH) was determined by using 1:2.5 soils: water suspension with the calibrated pH meter by following the method given by Jackson (1973).

b) Soil Salinity (Electrical Conductivity) was determined by using 1:2.5 soils: water suspension with the calibrated conductivity meter by following the method given by Jackson (1973).

c) Organic Carbon was determined by following modified Walkley-Black (1934) method.

d) Available Phosphorous was determined by following Olsen et al (1954) method and available phosphorous was expressed in P_2O_5 by using conversion factor.

e) Available Potassium was determined by Flame Photometer with neutral ammonium acetate as an extractant by following Hanway and Heidel (1952) method and available potassium was expressed in K_2O by using conversion factor.

f) Available Sulphur was determined by following Turbidimetric Chesin and Yien (1950) method and available sulphur was expressed in 'S'.

g) Available Micronutrient cations (Zn, Fe, Cu & Mn) were determined by following Lindsay and Norvell (1978) method using Atomic Absorption Spectrophotometer.

h) Available Boron was determined by following Hot-water Soluble Boron Gupta (1967) method and available Boron was expressed in 'B'.

Communication of the Soil Test and Recommendation Report (STRR):

Based on the analysis data, report was generated for each sample and communicated to the concerned farmer either through mail or in person. Suitable chemical amendments wherever required for soil reclamation to have optimum output were also recommended including use of organic manures.

Categorisation of Soil Test Values/ Soil Fertility Rating:

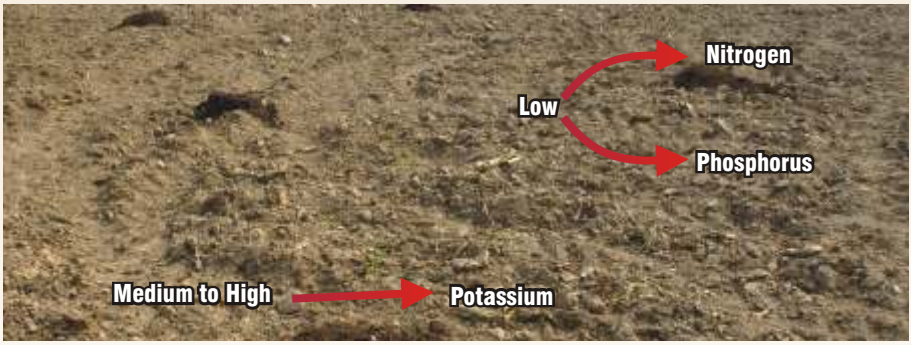
The soil test data were classified into different categories to find out the level of fertility with respect to macro and micro nutrients in different regions as per details:

PARAMETER	VALUE	RATING
pH (1 : 2.5)	Less than 6.5	Acidic
	6.5 to 8.5	Normal
	Greater than 8.5	Alkaline
EC (1 : 2.5) (dS/m)	Less than or equal to 1.0	Normal
	Greater than 1.0	Saline
Organic Carbon (%)	Less than 0.50	Low
	0.50 to 0.75	Medium
	Greater than 0.75	High
Available P_2O_5 (kg/ha)	Less than 25	Low
	25 to 50	Medium
	Greater than 50	High
Available K_2O (kg/ha)	Less than 130	Low
	130 to 330	Medium
	Greater than 330	High
Available Sulphur (ppm)	Less than 10	Low
	10 to 20	Medium
	Greater than 20	High
Available Micronutrients	Rating	
	Deficient	Sufficient
Zinc (Zn)	Less than 0.60 ppm	Equal to or greater than 0.60 ppm
Iron (Fe)	Less than 2.50 ppm	Equal to or greater than 2.50 ppm
Copper (Cu)	Less than 0.20 ppm	Equal to or greater than 0.20 ppm
Manganese (Mn)	Less than 2.00 ppm	Equal to or greater than 2.00 ppm
Boron (B)	Less than 0.40 ppm	Equal to or greater than 0.40 ppm

Inferences...

Following inferences have been drawn from the study of soil test values with respect to nitrogen, phosphorous and potash (NPK):

1. Macronutrient Status in Soils
(Nitrogen, Phosphorous and Potash):



A. Based on State wise soil test summaries for NPK, following conclusions have been drawn and details have been presented in Table 1:

i. Soils in North-Western states in India, available nitrogen were found 56.48% in low, 27.25% medium and 16.27% in high contents. In Uttar Pradesh, Punjab, Rajasthan and Haryana, most of the soils (55.55 to 61.66 %) were low, some (19.63 to 32.80%) were medium and few (10.78 to 18.71%) were high in nitrogen content. Soils of Gujarat, Uttrakhand and Jammu & Kashmir were low to medium whereas in Chhattisgarh, Himachal Pradesh and Madhya Pradesh soils were medium to high content in available nitrogen contents.

ii. Most of the soils (61.02%) were low, some (25.89%) were medium and few (13.09%) were high in available phosphorous contents.

iii. Madhya Pradesh was the state, where maximum soils (85.45%) were found high and least soils (1.01%) were low in available potash content. In Uttar Pradesh, Punjab, Haryana, Himachal Pradesh, Uttrakhand and Jammu & Kashmir most of the soils (42.14 to 68.79%) were found in medium whereas other States like Rajasthan, Gujarat and Chhattisgarh soils were found in medium to high content of available potash.

On overall basis, most of the soils were found low in available nitrogen and phosphorous contents whereas medium to high in available potash contents.

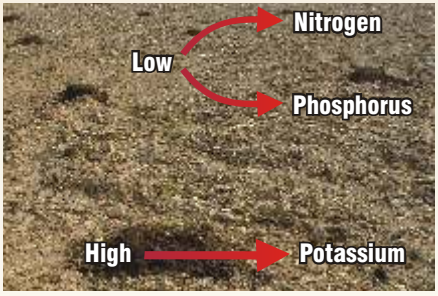
B. Based on State wise NPK nutrient index, following conclusions have been drawn and details have been presented in Table 2:

i. Soils of Uttar Pradesh, Rajasthan, Punjab and Haryana were found low whereas soils of Madhya Pradesh, Jammu & Kashmir, West Bengal, Assam, Gujarat, Chhattisgarh and Uttrakhand were found medium and soil of Himachal Pradesh was high in available nitrogen contents.

ii. All soils of North-Western states in India were low in available phosphorous status except Punjab where it was medium and West Bengal & Assam were high.

iii. Most of the soils in available potash were found high status (Punjab, Rajasthan, Haryana, Madhya Pradesh, Gujarat and Chhattisgarh), medium in Uttar Pradesh, Jammu & Kashmir, West Bengal and Himachal Pradesh and low status in Assam & Uttrakhand states.

On overall basis, it may be concluded that soils of North-Western India were low in available nitrogen & phosphorous and high in available potash status.



C. Based on District wise NPK nutrient index, following conclusions have been drawn and details have been presented in Table 3:

i. Soils of 100, 101 and 19 districts of North-Western Indian States were found low, medium and high status in available nitrogen content, respectively.

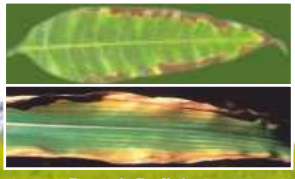
ii. Available phosphorous were found low, medium and high in soils of 165, 47 and 8 districts of North-Western Indian States.

iii. Status of available potash was found low, medium and high in 24, 104 and 92 districts of North-Western Indian States respectively.

Thus, it is inferred from the results that there is wide spread deficiency (165 districts) of phosphorous in North-Western Indian states. Low to medium status in available nitrogen (201 districts) and potash (128 districts), respectively. Hence, there is a need to apply the balanced dosage of plant nutrients in order to maximise crop production.


Nitrogen Deficiency


Phosphorous Deficiency


Potash Deficiency

2. Sulphur Status in Soils (Table 4):

About 15453 samples were collected from Uttar Pradesh (7084), Punjab (1922), Rajasthan (3163), Haryana (2737) and Madhya Pradesh (547) and analysed at ADL's with $CaCl_2$- extractable S (Chesin and Yien, 1950) method.

Status of available sulphur was found 20.75% to 40.40% in low, 13.53% to 22.32% in medium and 40.40% to 63.61% in high category. Maximum deficiency percentages of sulphur were observed in Madhya Pradesh (40.40%) followed by Uttar Pradesh (38.82%), Punjab (35.74%), Rajasthan (28.93%) and Haryana (20.75%).

Sulphur Deficiency

3. Micronutrients (Zinc, Iron, Copper, Manganese and Boron) Status in Soils (Table 4): Samples were collected with due care for micronutrients analysis and analysed by AAS (DTPA extractable Zn, Fe, Cu & Mn). Boron was analysed with Hot-Water Soluble Boron method. The sample size in states of Himachal Pradesh, Gujarat and Chhattisgarh were very small, therefore no valid conclusions can be drawn for these states for Zn, Fe, Cu and Mn status. Based on state wise soil test summaries for above micronutrients, the following conclusions have been drawn:

a. Soils in North-Western states in India, available Zn content were found 65.37% deficient. The maximum soils found Zn-deficient in Jammu & Kashmir (88.94%) followed by Rajasthan (84.68%), Punjab (52.87%), Uttar Pradesh (50.48%), Madhya Pradesh (45.56%) and Haryana (41.18%).

b. Iron deficient soil in North-Western states in India was 58.17% and ranged from 14.04 to 79.88%. The maximum Iron (Fe) deficient soils were found in Rajasthan (79.88%) and minimum in Jammu & Kashmir (14.04%).

c. Overall 21.04% soils were deficient in copper. Rajasthan was maximum deficient in copper (28.19%) followed by Punjab (20.21%), Uttar Pradesh (17.91%) whereas Madhya Pradesh (1.21%) and Jammu & Kashmir (1.99%) were least deficient.

d. Mn deficiency in soils was observed in the range of 9.79% to 43.53% being minimum in Madhya Pradesh (9.79%) and maximum in Jammu & Kashmir (43.53%).

e. Soil samples were collected for Boron analysis from Uttar Pradesh, Punjab, Rajasthan, Haryana and Madhya Pradesh. Sample size was very low in Punjab; hence no valid conclusion can be drawn. In North-Western states of India, boron deficiency was found in 64.32% soils. The maximum B-deficient soils were found in Haryana (69.52%) followed by Uttar Pradesh (65.90%), Madhya Pradesh (59.31%) and Rajasthan (52.69%).

From the above results, data revealed that there is widespread deficiency of available Zinc (65.37%), Iron (58.17%) and Boron (64.32%) and also tending towards deficiency in available Copper (21.04%), Manganese (34.67%) and Sulphur (33.27%). The incidence of deficiency of all secondary and micronutrients is continuously increasing over years due to mismatch between crop removal and addition. Therefore, it is very important to take necessary steps to apply the required amount of secondary and micronutrients for enhancing and sustaining production in the country.

4. Alkalinity / Acidity Status in Soils (Table 5): Soils with alkalinity problems were observed maximum in Jammu & Kashmir (29.34%) followed by Punjab (27.48%), Haryana (21.57%) and Rajasthan (19.62%). On the other hand, the acidic soils were found in Himachal Pradesh (92.20) followed by West Bengal (86.67%), Uttrakhand (43.57%) and Jammu & Kashmir (36.90%).

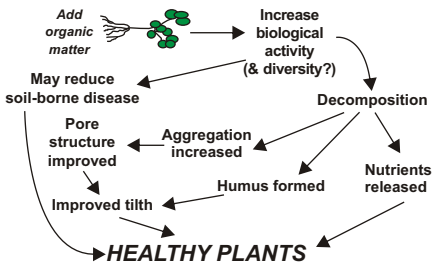
5. Salinity Status in Soils (Table 5): The maximum soils affected by the problems of salinity were found in Haryana (11.59%) followed by Gujarat (6.77%), Rajasthan (6.24%), Punjab (5.84%), Uttrakhand (4.76%) and Uttar Pradesh (4.54%).

Recommendations/ Suggestions

Following recommendations have been made on the basis of analysis of 696584 soil samples for different soil parameters:

1. Promote effective and environmentally sound management of plant nutrients.
2. The balanced and effective use of plant nutrients from both organic and inorganic sources, at the farm and community levels, should be emphasized; the use of local sources of organic matter and other soil amendments should be promoted; and successful case of integrated plant nutrient management should be analysed, documented and disseminated.
3. Innovative approaches to support and promote integrated plant nutrient management should be pursued.
4. Addition of Organic manures (Compost/ FYM), bio fertilisers and green manures should be practiced under balanced fertilization programme from improving soil physical, biological and chemical properties to have sustainable agricultural production.

Effects of Organic Manure additions



5. Amelioration technology for correction of micro nutrient deficiencies are as under:

Micro Nutrient	Fertilizer	Soil application (kg/ha)	Foliar Spray (Two times at 15 days interval)
Zn	Zinc Sulphate	25	500 g Zinc Sulphate + 250 g slaked lime per 100 litre water.
Fe	Iron Sulphate	20	1 kg Iron Sulphate + 100 g citric acid per 100 litre water
Cu	Copper Sulphate	5	200 g Copper Sulphate per 100 litre water
Mn	Manganese Sulphate	20	500 g Manganese Sulphate+300 g slaked lime per 100 litre water
B	Borex	10	500 g Borex per 100 litre water

6. For reclamation of sodic/ alkali soils, use of chemical amendments viz., gypsum, sulphur etc and for saline soils, use of organic manures/ green manures coupled with leaching of soluble salts with water from root zone should be followed before on set of monsoon.

7. Soil conservation measures like leveling, bunding of fields, cover crop, mulching etc to reduce erosion / nutrient losses should be practiced.

8. In canal irrigated areas, irrigation water should also be used efficiently so as to avoid secondary salinisation of soils.

9. Before using tubewell water for irrigation purposes it should be analysed in Soil Testing Laboratory for its suitability for a particular crop and soil in a particular region.

10. Adopting crop rotation to maintain soil & crop health. Crop rotation prevents soil depletion, maintain soil fertility, reduce soil erosion, control insect-pests, disease & weeds and also decrease the need for inorganic supplements.

11. Crop follow periods practices should be adapted to maintain soil fertility. Crop follow periods are when no crops are planted to allow time for plant to replace the nutrients in the soil. Follow periods benefits include soil fertility restoration, suppression of weeds & protection of the soil against erosion.

References

- Chesin, L. and Yien, C.H. (1950). Turbidimetric determination of available sulphates. Proc. Soil. Sci. Soc. Am. 14:149-151
- Gupta, U.C. (1967). A simplified method for determining Hot Water - Soluble Boron in Podzol soils. Soil Sci. 103:424-428.
- Hanway, J.J. and Heidel, H. (1952). Soil analysis methods as used in Lowa State Collage, Soil Testing Laboratory, Lowa State Collage Bull, 57:1-131.
- Jackson, M.L. (1973). Soil Chemical Analysis. Prentice Hall of India Pvt. Ltd., PP:25-214.
- Kanwar, J.S. and Katyal, J.C. (1997). Plant Nutrient Needs, Supply, Efficiency and Policy Issues : 2000 - 2025. National Academy of Agricultural Sciences, New Delhi, India, PP:91-113.
- Lindsay, W.L. and Norvell, W.A. (1978). Development of DTPA Soil test for Zinc, Iron, Manganese and Copper. Soil Sci. Soc. Am. J. 42:421-428.
- Olsen, S.R., Cale, C.V. Watanabe, F.S. and Dean, L.A. (1954). Estimation of available phosphorus in soil by extraction with sodium bicarbonate. Circular No. 939. USDA Washington, DC, USA.
- Walkley, A. and Black, C.A. (1934). An examination of different methods for determining soil organic matter and a proposed modification of the chromic acid titration method. Soil Sci. 37:29-38.

TABLE 1 : STATEWISE SOIL TEST SUMMARIES FOR ORGANIC CARBON, PHOSPHOROUS AND POTASH IN NORTH -WESTERN STATES

S. No.	STATE	NO. OF DISTTS COVERED	TOTAL NO OF SOIL SAMPLES	Organic Carbon (%)			Available P_2O_5 (kg/ha)			Available K_2O (kg/ha)		
				L	M	H	L	M	H	L	M	H
1	Uttar Pradesh	57	145152	80632	47615	16905	93316	35256	16580	43633	68053	33466
			Per cent Samples	**55.55**	**32.80**	**11.65**	**64.29**	**24.29**	**11.42**	**30.06**	**46.88**	**23.06**
2	Madhya Pradesh	31	35708	9118	12745	13845	23559	8086	4063	360	4837	30511
			Per cent Samples	**25.53**	**35.69**	**38.77**	**65.98**	**22.64**	**11.38**	**1.01**	**13.55**	**85.45**
3	Rajasthan	33	271800	167589	53363	50848	176967	68624	26209	9275	97253	165272
			Per cent Samples	**61.66**	**19.63**	**18.71**	**65.11**	**25.25**	**9.64**	**3.41**	**35.78**	**60.81**
4	Uttrakhand	4	1533	403	799	331	981	415	137	841	646	46
			Per cent Samples	**26.29**	**52.12**	**21.59**	**63.99**	**27.07**	**8.94**	**54.86**	**42.14**	**3.00**
5	Gujarat	21	16026	6006	5652	4368	11027	3435	1564	1157	6210	8659
			Per cent Samples	**37.48**	**35.27**	**27.26**	**68.81**	**21.43**	**9.76**	**7.22**	**38.75**	**54.03**
6	Haryana	21	121915	72228	36991	12696	64982	35454	21479	2408	65967	53540
			Per cent Samples	**59.24**	**30.34**	**10.41**	**53.30**	**29.08**	**17.62**	**1.98**	**54.11**	**43.92**
7	Punjab	22	93591	54362	29136	10093	45639	27574	20378	6099	47806	39686
			Per cent Samples	**58.08**	**31.13**	**10.78**	**48.76**	**29.46**	**21.77**	**6.52**	**51.08**	**42.40**
8	Chhattisgarh	10	7598	2018	2369	3211	6367	928	303	612	2530	4456
			Per cent Samples	**26.56**	**31.18**	**42.26**	**83.80**	**12.21**	**3.99**	**8.05**	**33.30**	**58.65**
9	Jammu & Kashmir	10	2713	898	943	872	2079	432	202	783	1634	296
			Per cent Samples	**33.10**	**34.76**	**32.14**	**76.63**	**15.92**	**7.45**	**28.86**	**60.23**	**10.91**
10	West Bengal	9	360	135	140	85	60	66	234	154	167	39
			Per cent Samples	**37.50**	**38.89**	**23.61**	**16.67**	**18.33**	**65.00**	**42.78**	**46.39**	**10.83**
11	Himanchal Pradesh	1	141	16	44	81	78	43	20	1	97	43
			Per cent Samples	**11.35**	**31.21**	**57.45**	**55.32**	**30.50**	**14.18**	**0.71**	**68.79**	**30.50**
12	Assam	1	47	18	22	7	7	6	34	39	7	1
			Per cent Samples	**38.30**	**46.81**	**14.89**	**14.89**	**12.77**	**72.34**	**82.98**	**14.89**	**2.13**
Grand Total		**220**	**696584**	393423	189819	113342	425062	180319	91203	65362	295207	336015
Per cent Sample				**56.48**	**27.25**	**16.27**	**61.02**	**25.89**	**13.09**	**9.38**	**42.38**	**48.24**

L- Low, M - Medium, H - High

TABLE 2 : STATEWISE NUTRIENT INDEX OF N, P & K IN NORTH - WESTERN STATES

S. No.	STATE	TOTAL NO OF SOIL SAMPLES	NITROGEN		PHOSPHOROUS		POTASH	
			VALUE	CATEGORY	VALUE	CATEGORY	VALUE	CATEGORY
1	Uttar Pradesh	145152	1.56	L	1.47	L	1.93	M
2	Madhya Pradesh	35708	2.13	M	1.45	L	2.84	H
3	Rajasthan	271800	1.57	L	1.45	L	2.57	H
4	Uttrakhand	1533	1.95	M	1.45	L	1.48	L
5	Gujarat	16026	1.90	M	1.41	L	2.47	H
6	Haryana	121915	1.51	L	1.64	L	2.42	H
7	Punjab	93591	1.53	L	1.73	M	2.36	H
8	Chhattisgarh	7598	2.16	M	1.20	L	2.51	H
9	Jammu & Kashmir	2713	1.99	M	1.31	L	1.82	M
10	West Bengal	360	1.86	M	2.48	H	1.68	M
11	Himanchal Pradesh	141	2.64	H	1.59	L	2.30	M
12	Assam	47	1.77	M	2.57	H	1.19	L
Overall		**696584**	**1.60**	**L**	**1.52**	**L**	**2.39**	**H**

NUTRIENT INDEX < 1.67 - LOW, 1.67 - 2.33 - MEDIUM, > 2.33 - HIGH
L - LOW, M - MEDIUM & H - HIGH
Nutrient Index = (Per cent Samples falling in low category X 1) + (Per cent samples falling in medium category X 2) + (Per cent samples falling in high category X 3) / 100

TABLE - 3 SOIL TEST SUMMARY BASED ON DISTRICTWISE NUTRIENT INDEX FOR N, P & K IN NORTH - WESTERN STATES

Sr. No.	State	Nutrient	Category	Districts
1	Uttar Pradesh	Organic Carbon (Available Nitrogen)	Low (34)	Hardoi, Etawah, Aligarh, Farrukhabad, Allahabad, Mainpuri, Bulandshar, Ghaziabad, Fatehpur, Etah, Moradabad, Agra, Lucknow, Shahjahanpur, Varanasi, Raibareilly, Santkabir Nagar, Mahamaya Nagar, Hathras, Kanpur, Ambedkar Nagar, Unnao, Badaun, Ferozabad, Mathura, Kannoj, Auraiya, Jalaun, Ghazipur, Saharanpur, Chandauli, Mirzapur, Kashiram Nagar, Bahraich
			Medium (23)	Lakhimpur Kheri, Sitapur, Barabanki, Meerut, Muzaffar Nagar, Bareilly, Faizabad, Gorakhpur, Lalitpur, Sultanpur, Rampur, Azamgarh, Deoria, Jhansi, Jyothi Phoole Nagar, Kaushambi, Maharajganj, Mau, Pilibhit, Pratapgarh, Gonda, Siddharth Nagar, Kushinagar
			High (0)	Nil
		Available Phosphorous	Low (48)	Hardoi, Lakhimpur Kheri, Sitapur, Barabanki, Aligarh, Allahabad, Mainpuri, Bulandshar, Muzaffar Nagar, Ghaziabad, Fatehpur, Etah, Moradabad, Agra, Lucknow, Faizabad, Shahjahanpur, Varanasi, Gorakhpur, Raibareilly, Santkabir Nagar, Mahamaya Nagar, Lalitpur, Sultanpur, Rampur, Azamgarh, Unnao, Badaun, Jhansi, J. P. Nagar, Ferozabad, Mathura, Kushinagar, Kannoj, Kaushambi, Auraiya, Jalaun, Maharajganj, Mau, Saharanpur, Pilibhit, Pratapgarh, Chandauli, Mirzapur, Kashiram Nagar, Gonda, Sidharth Nagar, Bahraich
			Medium (8)	Etawah, Farrukhabad, Meerut, Bareilly, Kanpur, Deoria, Ambedkarnagar, Ghazipur
			High (0)	Nil
		Available Potash	Low (12)	Lakhimpur Kheri, Sitapur, Faizabad, Gorakhpur, Ambedkarnagar, Unnao, Badaun, Kushi Nagar, Kaushambi, Maharajganj, Gonda, Siddharth Nagar
			Medium (42)	Hardoi, Barabanki, Etawah, Aligarh, Farukkhabad, Meerut, Bulandshahar, Muzaffar Nagar, Ghaziabad, Fatehpur, Moradabad, Bareilly, Agra, Lucknow, Shahjahanpur, Varanasi, Raibareili, Sant Kabir Nagar, Hathras, Kanpur, Sultanpur, Rampur, Azamgarh, Deoria, Jyotiba Phoole Nagar, Firozabad, Mathura, Kannoj, Auraiya, Jalaun, Ghazipur, Mau, Saharanpur, Pilibhit, Pratapgarh, Chandauli, Mirzapur, Kashiram Nagar, Etah, Mainpuri, Allahabad, Bahraich
			High (2)	Lalitpur, Jhansi
2	Punjab	Organic Carbon (Available Nitrogen)	Low (10)	Ferozepur, Mansa, Muktsar, Sangrur, Jalandhar, Hoshiarpur, Bathinda, Faridkot, Taran - Taran, Barnala,
			Medium (11)	Gurdaspur, Rupnagar, Fatehgarh Sahid, Kapurthala, Mohali, Patiala, Ludhiana, Sahid Bhagat Singh Nagar, Amristar, Moga
			High (0)	Nil
		Available Phosphorous	Low (4)	Ferozepur, Mansa, Muktsar, Barnala
			Medium (16)	Gurdaspur, Ropar, Fatehgarh Sahib, Kapoorthala, Mohali, Patiala, Ludhiana, Sahid Bhagat Singh Nagar, Sangrur, Jalandhar, Hoshiarpur, Bathinda, Faridkot, Taran - Taran, Amristar, Moga
			High (1)	Mohali
		Available Potash	Low (1)	Mohali
			Medium (12)	Gurdaspur, Rupnagar, Fatehgar Sahib, Kapurthala, Mohali, Patiala, Ludhiana, Sahid Bhagat Singh Nagar, Sangrur, Jalandhar, Hoshiarpur, Barnala
			High (8)	Ferozepur, Mansa, Muktsar, Bathinda, Faridkot, Taran - Taran, Amristar, Moga

Sr. No.	State	Nutrient	Category	Districts
3	Rajasthan	Organic Carbon (Available Nitrogen)	Low (20)	Jaipur, Tonk, Dausa, Sriganganagar, Hanumangarh, Churu, Bikaner, Jodhpur, Sikar, Alwar, Swai Madhopur, Barmer, Pali, Jhunjhunu, Bharatpur, Jaisalmer, Karauli, Nagaur, Jalour, Dholpur
			Medium (11)	Ajmer, Banswara, Jhalawar, Bhilwara, Baran, Udaipur, Kota, Bundi, Sirohi, Rajsamand, Dungarpur
			High (2)	Chittorgarh, Pratapgarh
		Available Phosphorous	Low (29)	Jaipur, Tonk, Dausa, Sriganganagar, Hanumangarh, Churu, Banswara, Bikaner, Jodhpur, Jhalawar, Sikar, Bhilwara, Alwar, Swai Madhopur, Baran, Udaipur, Chittorgarh, Kota, Bundi, Barmer, Pali, Sirohi, Jhunjhunu, Bharatpur, Jaisalmer, Karauli, Nagaur, Jalour, Pratapgarh
			Medium (4)	Ajmer, Rajsamand, Dungarpur, Dholpur
			High (0)	Nil
		Available Potash	Low (0)	Nil
			Medium (11)	Jaipur, Dausa, Churu, Sikar, Barmer, Jhunjhunu, Bharatpur, Karauli, Jalour, Dungarpur, Dholpur
			High (22)	Tonk, Ajmer, Sriganganagar, Hanumangarh, Banswara, Bikaner, Jodhpur, Jhalawar, Bhilwara, Alwar, Swai Madhopur, Baran, Udaipur, Chittorgarh, Kota, Bundi, Pali, Sirohi, Rajsamand, Jaisalmer, Nagaur, Pratapgarh
4	Haryana	Organic Carbon (Available Nitrogen)	Low (16)	Hisar, Kaithal, Mahendragarh, Jind, Rohtak, Sirsa, Faridabad, Rewari, Fatehabad, Jhajjar, Sonipat, Bhiwani, Gurgaon, Palwal, Mewat, Panchkula
			Medium (5)	Karnal, Kurukshetra, Panipat, Yamunanagar, Ambala
			High (0)	Nil
		Available Phosphorous	Low (14)	Hisar, Rohtak, Sirsa, Faridabad, Rewari, Fatehabad, Jhajjar, Yamunagar, Ambala, Bhiwai, Gurgaon, Palwal, Mewat, Panchkula
			Medium (7)	Karnal, Kurukshetra, Kaithal, Mahendragarh, Panipat, Jind, Sonipat
			High (0)	Nil
		Available Potash	Low (0)	Nil
			Medium (12)	Sonipat, Karnal, Panipat, Faridabad, Rewari, Yamunagar, Ambala, Bhiwani, Gurgaon, Palwal, Mewat, Panchkula
			High (9)	Hisar, Kurukshetra, Kaithal, Mahendragarh, Jind, Rohtak, Sirsa, Fatehabad, Jhajjar,
5	Madhya Pradesh	Organic Carbon (Available Nitrogen)	Low (5)	Morena, Burhanpur, Khandwa, Tikamgarh, Damoh,
			Medium (18)	Ujjain, Gwalior, Khargone, Mandsaur, Ratlam, Raisen, Bhopal, Bhind, Dhar, Shajapur, Harda, Sehore, Datia, Jabalpur, Sheopur, Ashoknagar, Sagar, Seoni
			High (8)	Indore, Hoshangabad, Dewas, Neemuch, Chhindwara, Shivpuri, Guna, Barwani
		Available Phosphorous	Low (26)	Ujjain, Gwalior, Khargone, Mandsaur, Hoshangabad, Ratlam, Raisen, Bhopal, Bhind, Dewas, Dhar, Shajapur, Harda, Sehore, Chhindwara, Shivpuri, Guna, Datiya, Jabalpur, Burhanpur, Sheopur, Ashoknagar, Tikamgarh, Damoh, Sagar, Seoni
			Medium (5)	Indore, Morena, Neemuch, Khandwa, Barwani
			High (0)	Nil

Sr. No.	State	Nutrient	Category	Districts
		Available Potash	Low (0)	Nil
			Medium (1)	Neemuch
			High (30)	Ujjain, Gwalior, Khargone, Indore, Mandsaur, Morena, Hoshangabad, Ratlam, Raisen, Bhopal, Bhind, Dewas, Dhar, Shajapur, Harda, Sehore, Chhindwara, Shivpuri, Guna, Datia, Jabalpur, Burhanpur, Khandwa, Sheopur, Ashoknagar, Tikamgarh, Barwani, Damoh, Sagar, Seoni
6	Jammu & Kashmir	Organic Carbon (Available Nitrogen)	Low (2)	Kupwara, Bandipora
			Medium (7)	Baramulla, Shopian, Anantang, Budgam, Kulgam, Ganderbal, Srinagar
			High (1)	Pulwama
		Available Phosphorous	Low (9)	Baramulla, Shopian, Anantang, Budgam, Kupwara, Kulgam, Ganderbal, Srinagar, Bandipora
			Medium (1)	Pulwama
			High (0)	Nil
		Available Potash	Low (3)	Shopian, Kupwara, Bandipora
			Medium (7)	Baramulla, Anantang, Budgam, Kulgam, Ganderbal, Srignagar, Pulwama
			High (0)	Nil
7	West Bengal	Organic Carbon (Available Nitrogen)	Low (2)	Bankura, West Medinapur
			Medium (6)	South 24 Parganas, Malda, Murshidabad, East Medinipur, Howrah, Hooghly
			High (1)	Burdman
		Available Phosphorous	Low (0)	Nil
			Medium (4)	South 24 Parganas, Bankura, Murshidabad, East Medinipur
			High (5)	Burdwan, Malda, Howarh, Hooghly, South Medinipur
		Available Potash	Low (3)	Bankura, Midnapur, South Medinipur
			Medium (6)	Burdwan, South 24 Parganas, Malda, Murshidabad, Howarh, Hooghly
			High (0)	Nil
8	Assam	Organic Carbon (Available Nitrogen)	Low (0)	Nil
			Medium (1)	Barpeta (Baksa)
			High (0)	Nil
		Available Phosphorous	Low (0)	Nil
			Medium (0)	Nil
			High (1)	Barpeta (Baksa)
		Available Potash	Low (1)	Barpeta (Baksa)
			Medium (0)	Nil
			High (0)	Nil

Sr. No.	State	Nutrient	Category	Districts
9	Himanchal Pradesh	Organic Carbon (Available Nitrogen)	Low (0)	Nil
			Medium (0)	Nil
			High (1)	Kullu
		Available Phosphorous	Low (1)	Kullu
			Medium (0)	Nil
			High (0)	Nil
		Available Potash	Low (0)	Nil
			Medium (1)	Kullu
			High (0)	Nil
10	Gujarat	Organic Carbon (Available Nitrogen)	Low (8)	Gandhinagar, Sabarkantha, Mehsana, Kheda, Banaskantha, Anand, Jamnagar, Porbandar
			Medium (10)	Surat, Ahmedabad, Bharuch, Mehsana, Valsad, Vadodara, Rajkot, Narmada, Surendranagar, Amreli
			High (3)	Navsari, Bhavnagar, Junagarh
		Available Phosphorous	Low (19)	Surat, Gandhinagar, Navsari, Sabarkantha, Mehsana, Valsad, Vijaypur, Bhavnagar, Vadodara, Rajkot, Kheda, Junagarh, Banaskantha, Narmada, Surendranagar, Amreli, Jamnagar, Porbandar, Bharuch
			Medium (2)	Ahmedabad, Anand
			High (0)	Nil
		Available Potash	Low (0)	Nil
			Medium (5)	Sabarkantha, Kheda, Banaskantha, Jamnagar, Porbandar
			High (16)	Gandhinagar, Surat, Ahmedabad, Navsari, Bharuch, Mehsana, Valsad, Bhavnagar, Vadodara, Rajkot, Junagarh, Narmada, Anand, Surendranagar, Amreli
11	Chhattisgarh	Organic Carbon (Available Nitrogen)	Low (1)	Mahasamund
			Medium (6)	Kanker, Raigarh, Raipur, Dhamtari, Durg, Bilaspur
			High (3)	Surguja, Bastar, Janjgir-Champa
		Available Phosphorous	Low (10)	Kanker, Raigarh, Raipur, Dhamtari, Durg, Bilaspur, Surguja, Bastar, Mahasamandh, Jajgir
			Medium (0)	Nil
			High (0)	Nil
		Available Potash	Low (1)	Janjgir-Champa
			Medium (5)	Kanker, Raigarh, Surguja, Bastar, Mahasamund
			High (4)	Raipur, Durg, Dhamtari, Bilaspur
12	Uttrakhand	Organic Carbon (Available Nitrogen)	Low (1)	Nainital
			Medium (3)	Udham Singh Nagar, Haridwar
			High (0)	Nil
		Available Phosphorous	Low (4)	Udham Singh Nagar, Haridwar, Nainital
			Medium (0)	Nil
			High (0)	Nil
		Available Potash	Low (3)	Udham Singh Nagar, Haridwar, Nainital
			Medium (1)	Udham Singh Nagar
			High (0)	Nil

TABLE 4: STATEWISE SOIL TEST SUMMARIES FOR MICRO AND SECONDRY NUTRIENT-ZINC, IRON, COPPER, MANGANESE, BORON & SULPHUR IN NORTH-WESTERN STATES

S. No.	STATE	Available Zn		Available Fe		Available Cu		Available Mn		Available Boron		Available Sulphur		
		D	S	D	S	D	S	D	S	D	S	L	M	H
1	Uttar Pradesh	5872	5761	5795	5803	2077	9521	3821	7777	1268	656	2750	1375	2959
	Per cent samples	**50.48**	**49.52**	**49.97**	**50.03**	**17.91**	**82.09**	**32.95**	**67.05**	**65.90**	**34.10**	**38.82**	**19.41**	**41.77**
2	Madhya Pradesh	657	785	189	557	9	737	73	673	274	188	221	105	221
	Per cent samples	**45.56**	**54.44**	**25.34**	**74.66**	**1.21**	**98.79**	**9.79**	**90.21**	**59.31**	**40.69**	**40.40**	**19.20**	**40.40**
3	Rajasthan	19292	3490	18198	4584	6422	16360	7370	15412	88	79	915	428	1820
	Per cent samples	**84.68**	**15.32**	**79.88**	**20.12**	**28.19**	**71.81**	**32.35**	**67.65**	**52.69**	**47.31**	**28.93**	**13.53**	**57.54**
4	Uttrakhand	0	0	0	0	0	0	0	0	0	0	1	0	0
	Per cent samples	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**100.00**	**0.00**	**0.00**
5	Gujarat	28	5	13	20	1	32	1	32	0	0	0	0	0
	Per cent samples	**84.85**	**15.15**	**39.39**	**60.61**	**3.03**	**96.97**	**3.03**	**96.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
6	Haryana	2037	2910	1341	3606	555	4392	1783	3164	130	57	568	428	1741
	Per cent samples	**41.18**	**58.82**	**27.11**	**72.89**	**11.22**	**88.78**	**36.04**	**63.96**	**69.52**	**30.48**	**20.75**	**15.64**	**63.61**
7	Punjab	7733	6893	5878	5902	2381	9399	4675	7105	10	2	687	429	806
	Per cent samples	**52.87**	**47.13**	**49.90**	**50.10**	**20.21**	**79.79**	**39.69**	**60.31**	**83.33**	**16.67**	**35.74**	**22.32**	**41.94**
8	Chhattisgarh	1	4	0	5	0	5	0	5	0	0	0	0	0
	Per cent samples	**20.00**	**80.00**	**0.00**	**100.00**	**0.00**	**100.00**	**0.00**	**100.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
9	Jammu & Kashmir	2413	300	381	2332	54	2659	1181	1532	0	0	0	0	0
	Per cent samples	**88.94**	**11.06**	**14.04**	**85.96**	**1.99**	**98.01**	**43.53**	**56.47**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
11	Himanchal Pradesh	35	19	0	54	0	54	46	8	0	0	0	0	0
	Per cent samples	**64.81**	**35.19**	**0.00**	**100.00**	**0.00**	**100.00**	**85.19**	**14.81**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Grand Total		**38068**	**20167**	**31795**	**22863**	**11499**	**43159**	**18950**	**35708**	**1770**	**982**	**5142**	**2765**	**7547**
		65.37	**34.63**	**58.17**	**41.83**	**21.04**	**78.96**	**34.67**	**65.33**	**64.32**	**35.68**	**33.27**	**17.89**	**48.84**

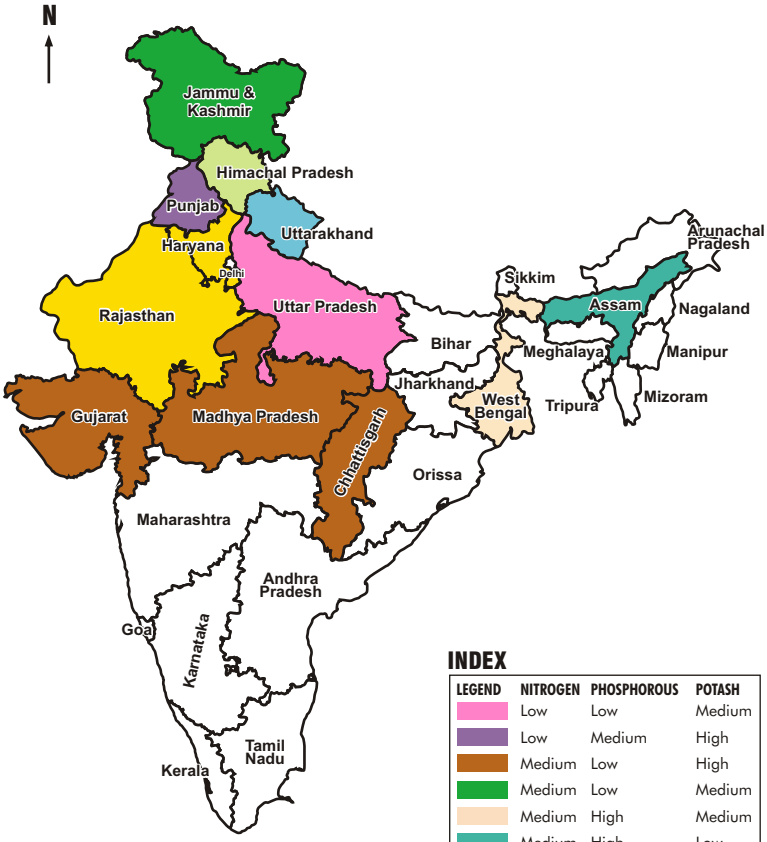
D - Deficient No. of Samples, S - Sufficient No. of Samples, L - Low, M - Medium, H - High

TABLE 5 : STATEWISE SOIL REACTION / SALINITY STATUS IN NORTH - WESTERN STATES

S. No.	STATE	NO. OF DISTTS COVERED	TOTAL NO OF SAMPLES	pH (1:2.5)			EC (1:2.5) dS/m	
				ACIDIC	NEUTRAL	ALKALINE	NORMAL	SALINE
1	Uttar Pradesh	57	145152	7530	127699	9923	138557	6595
			Per cent Samples	**5.19**	**87.98**	**6.84**	**95.46**	**4.54**
2	Madhya Pradesh	31	35708	617	34476	615	35040	668
			Per cent Samples	**1.73**	**96.55**	**1.72**	**98.13**	**1.87**
3	Rajasthan	33	271800	1213	217260	53327	254848	16952
			Per cent Samples	**0.45**	**79.93**	**19.62**	**93.76**	**6.24**
4	Uttrakhand	4	1533	668	865	0	1460	73
			Per cent Samples	**43.57**	**56.43**	**0.00**	**95.24**	**4.76**
5	Gujarat	21	16026	803	14801	422	14941	1085
			Per cent Samples	**5.01**	**92.36**	**2.63**	**93.23**	**6.77**
6	Haryana	21	121915	408	95210	26297	107785	14130
			Per cent Samples	**0.33**	**78.10**	**21.57**	**88.41**	**11.59**
7	Punjab	22	93591	1221	66652	25718	88121	5470
			Per cent Samples	**1.30**	**71.22**	**27.48**	**94.16**	**5.84**
8	Chhattisgarh	10	7598	2135	5445	18	7534	64
			Per cent Samples	**28.10**	**71.66**	**0.24**	**99.16**	**0.84**
9	Jammu & Kashmir	10	2713	1001	916	796	2705	8
			Per cent Samples	**36.90**	**33.76**	**29.34**	**99.71**	**0.29**
10	West Bengal	9	360	312	48	0	357	3
			Per cent Samples	**86.67**	**13.33**	**0.00**	**99.17**	**0.83**
11	Himanchal Pradesh	1	141	130	11	0	141	0
			Per cent Samples	**92.20**	**7.80**	**0.00**	**100.00**	**0.00**
12	Assam	1	47	47	0	0	47	0
			Per cent Samples	**100.00**	**0.00**	**0.00**	**100.00**	**0.00**
Grand Total		**220**	**696584**	**16085**	**563383**	**117116**	**651536**	**45048**
Per cent Samples				**2.31**	**80.88**	**16.81**	**93.53**	**6.47**

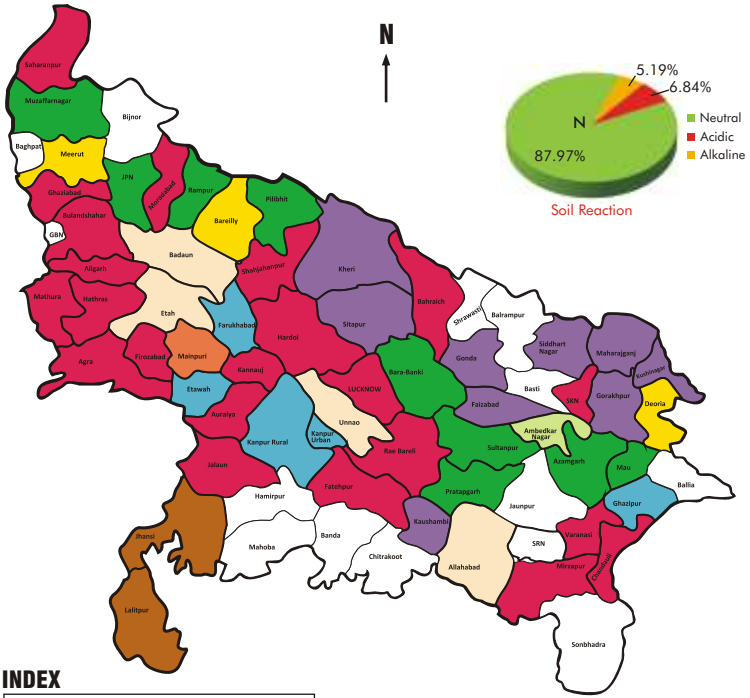
Available Nitrogen, Phosphorous and Potash Status in Soils of India

(This map is drawn on the basis of 696584 nos. of soil sample carried out from September 1995 to September 2011)



Soil Reaction, Salinity & Available NPK Status in Soils of Uttar Pradesh

(This map is drawn on the basis of 145152 nos. of soil sample analysis carried out from September 1995 to September 2011)



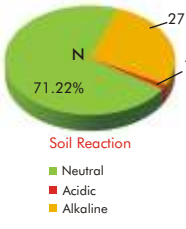
INDEX

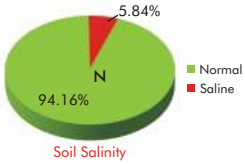
LEGEND	NITROGEN	PHOSPHOROUS	POTASH
	Low	Low	Medium
	Medium	Low	Low
	Medium	Low	Medium
	Low	Medium	Medium
	Medium	Medium	Medium
	Low	Low	Low
	Low	Low	High
	Medium	Low	High
	Low	Medium	Low

Soil Samples not collected

Soil Reaction, Salinity & Available NPK Status in Soils of Punjab

(This map is drawn on the basis of 93591 nos. of soil sample analysis carried out from September 1995 to September 2011)





INDEX

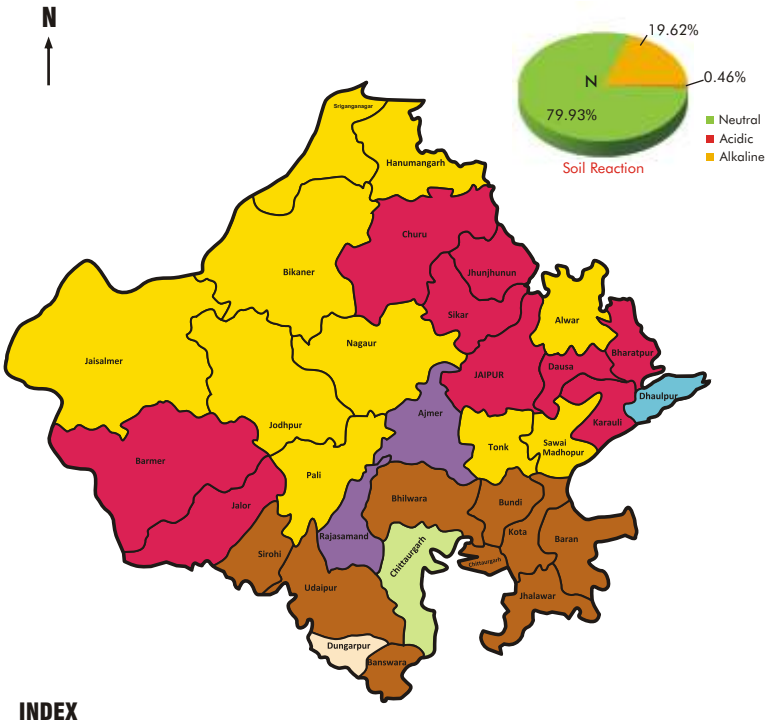
LEGEND	NITROGEN	PHOSPHOROUS	POTASH
	Low	Medium	Medium
	Low	Low	High
	Medium	Medium	Medium
	Low	Medium	High
	Medium	Medium	High
	Low	Low	Medium
	Medium	High	Low

→ Soil Samples not collected

RAJASTHAN

Soil Reaction, Salinity & Available NPK Status in Soils of Rajasthan

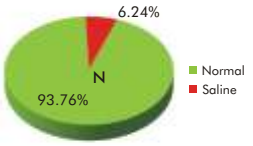
(This map is drawn on the basis of 271800 nos. of soil sample analysis carried out from September 1995 to September 2011)



INDEX

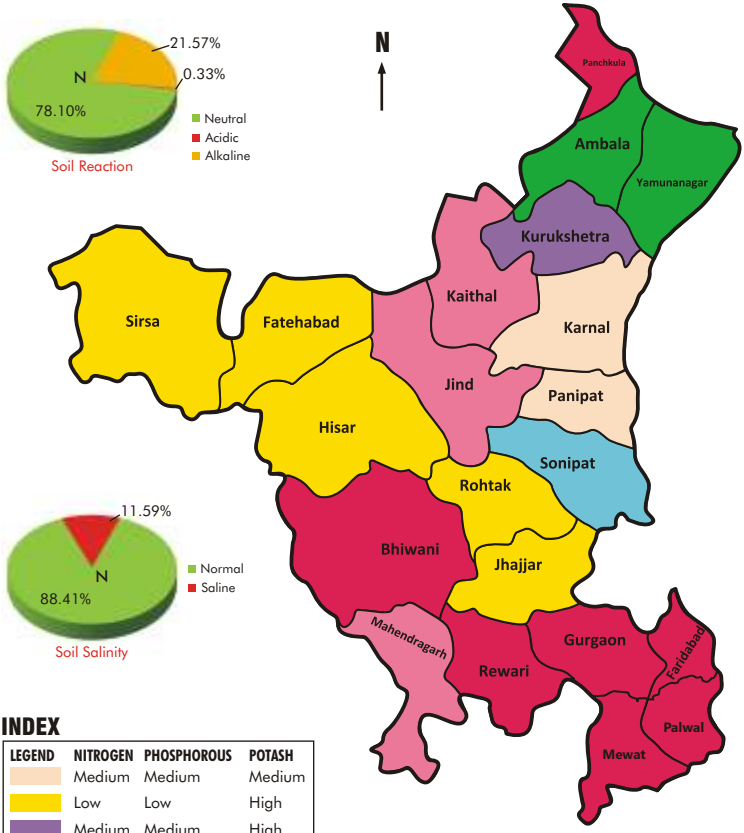
LEGEND	NITROGEN	PHOSPHOROUS	POTASH
	Low	Low	Medium
	Low	Low	High
	Medium	Medium	High
	Medium	Low	High
	High	Low	High
	Medium	Medium	Medium
	Low	Medium	Medium

Soil Samples not collected



Soil Reaction, Salinity & Available NPK Status in Soils of Haryana

(This map is drawn on the basis of 121915 nos. of soil sample analysis carried out from September 1995 to September 2011)



INDEX

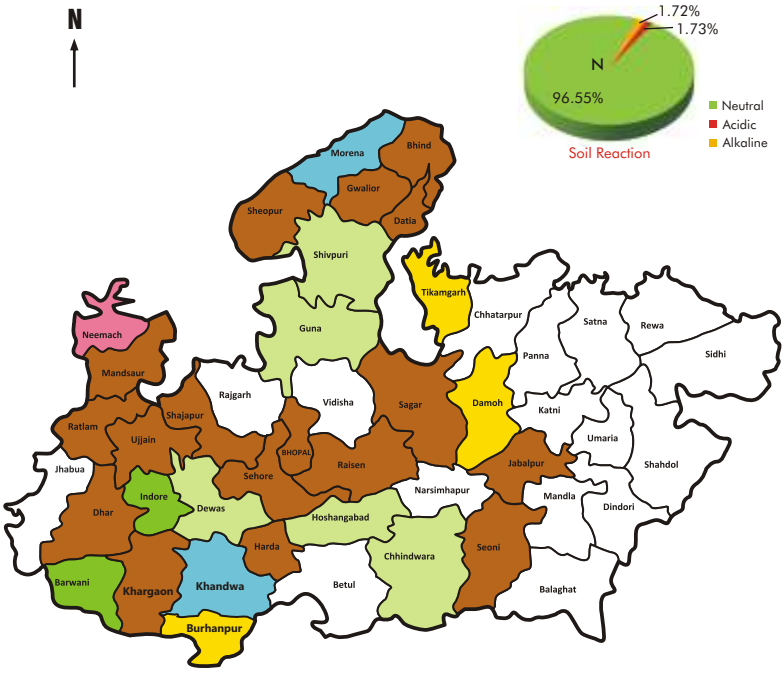
LEGEND	NITROGEN	PHOSPHOROUS	POTASH
	Medium	Medium	Medium
	Low	Low	High
	Medium	Medium	High
	Low	Medium	High
	Low	Low	Medium
	Medium	Low	Medium
	Low	Medium	Medium

→ Soil Samples not collected

MADHYA PRADESH

Soil Reaction, Salinity & Available NPK Status in Soils of Madhya Pradesh

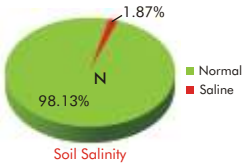
(This map is drawn on the basis of 35708 nos. of soil sample analysis carried out from September 1995 to September 2011)



INDEX

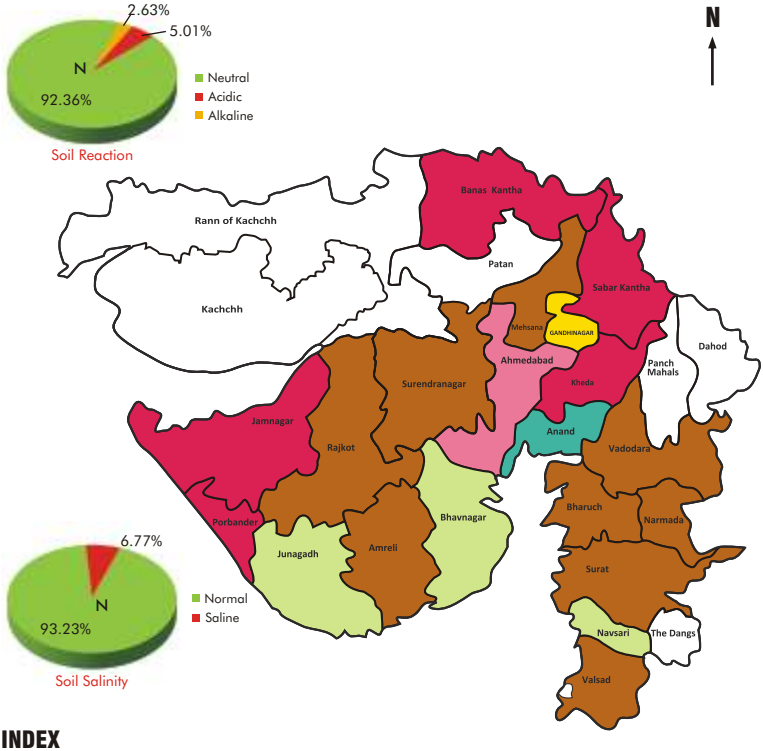
LEGEND	NITROGEN	PHOSPHOROUS	POTASH
	Medium	Low	High
	High	Medium	High
	Low	Medium	High
	High	Low	High
	High	Medium	Medium
	Low	Low	Low

→ Soil Samples not collected



Soil Reaction, Salinity & Available NPK Status in Soils of Gujarat

(This map is drawn on the basis of 16026 nos. of soil sample analysis carried out from September 1995 to September 2011)



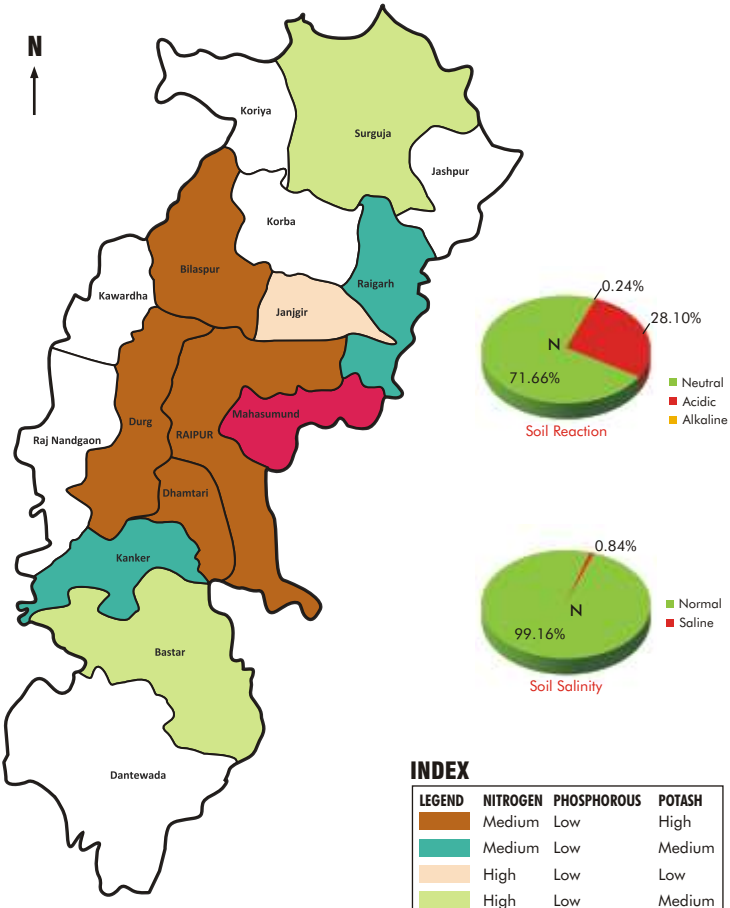
INDEX

LEGEND	NITROGEN	PHOSPHOROUS	POTASH
	Medium	Low	High
	Medium	Medium	High
	Low	Low	High
	High	Low	High
	Low	Low	Medium
	Low	Medium	High

Soil Samples not collected

Soil Reaction, Salinity & Available NPK Status in Soils of Chhattisgarh

(This map is drawn on the basis of 7598 nos. of soil sample analysis carried out from September 1995 to September 2011)



INDEX

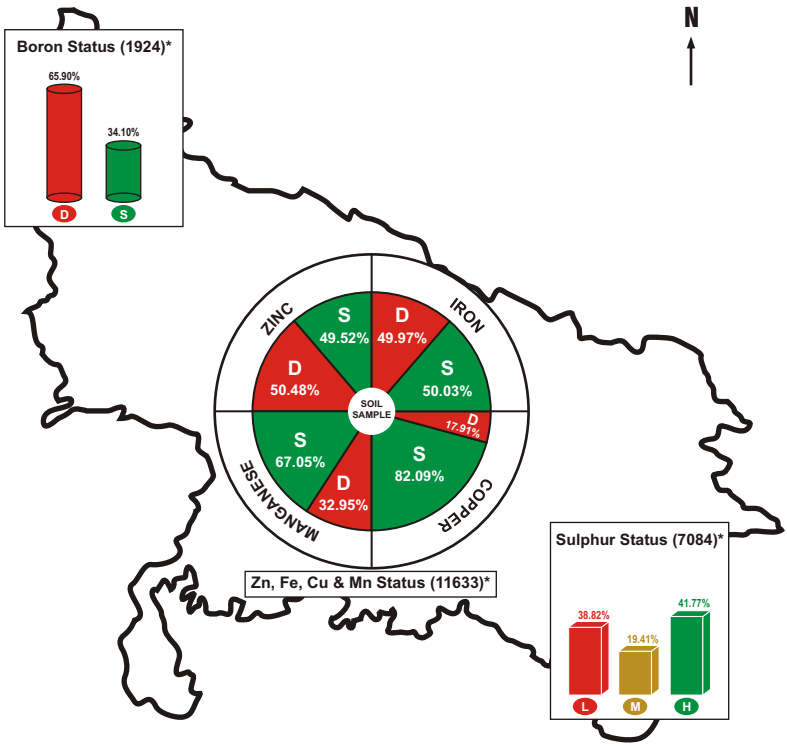
LEGEND	NITROGEN	PHOSPHOROUS	POTASH
	Medium	Low	High
	Medium	Low	Medium
	High	Low	Low
	High	Low	Medium
	Low	Low	Medium

Soil Samples not collected

UTTAR PRADESH

Available Micronutrient and Sulphur Status in Uttar Pradesh

* The figure in ( ) parenthesis denotes the no. of samples analysed from September 1995 to September 2011



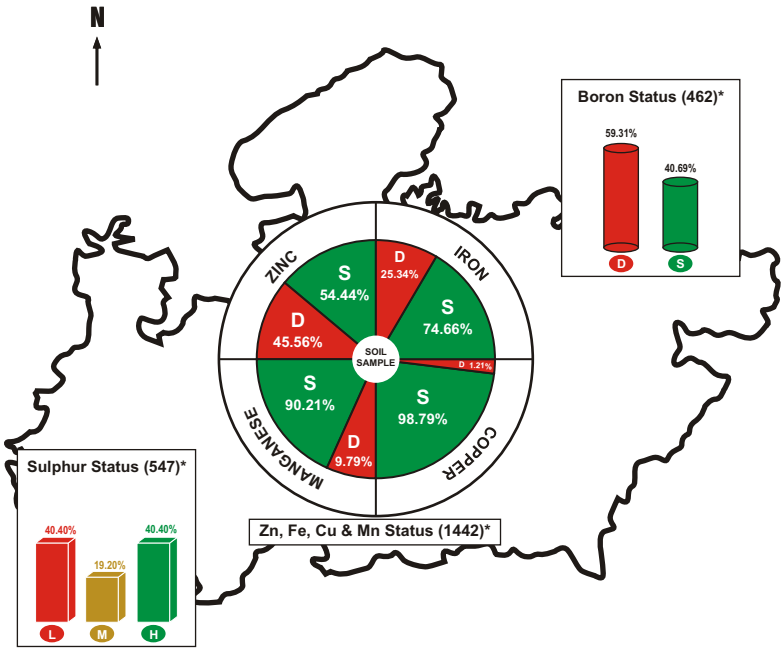
INDEX

D - Deficient
S - Sufficient
L - Low
M - Medium
H - High

MADHYA PRADESH

Available Micronutrient and Sulphur Status in Madhya Pradesh

* The figure in ( ) parenthesis denotes the no. of samples analysed from September 1995 to September 2011

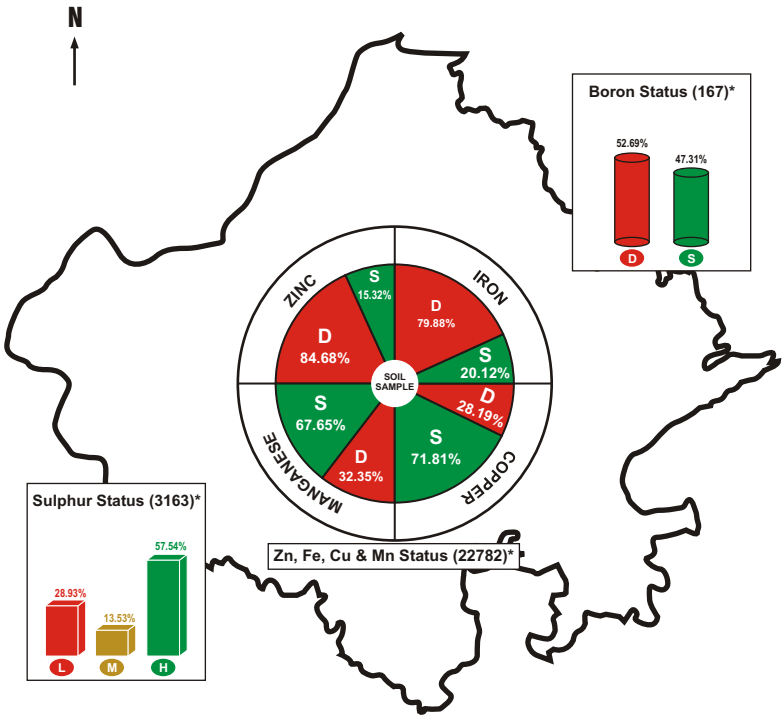


INDEX

D - Deficient
S - Sufficient
L - Low
M - Medium
H - High

Available Micronutrient and Sulphur Status in Rajasthan

* The figure in ( ) parenthesis denotes the no. of samples analysed from September 1995 to September 2011

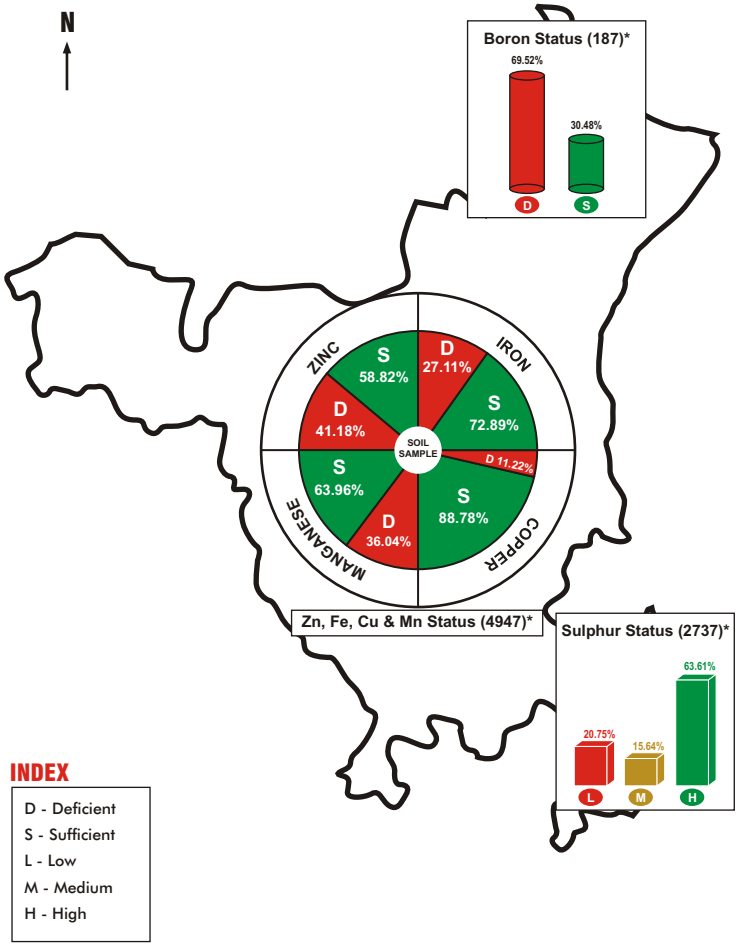


INDEX

D - Deficient
S - Sufficient
L - Low
M - Medium
H - High

Available Micronutrient and Sulphur Status in Haryana

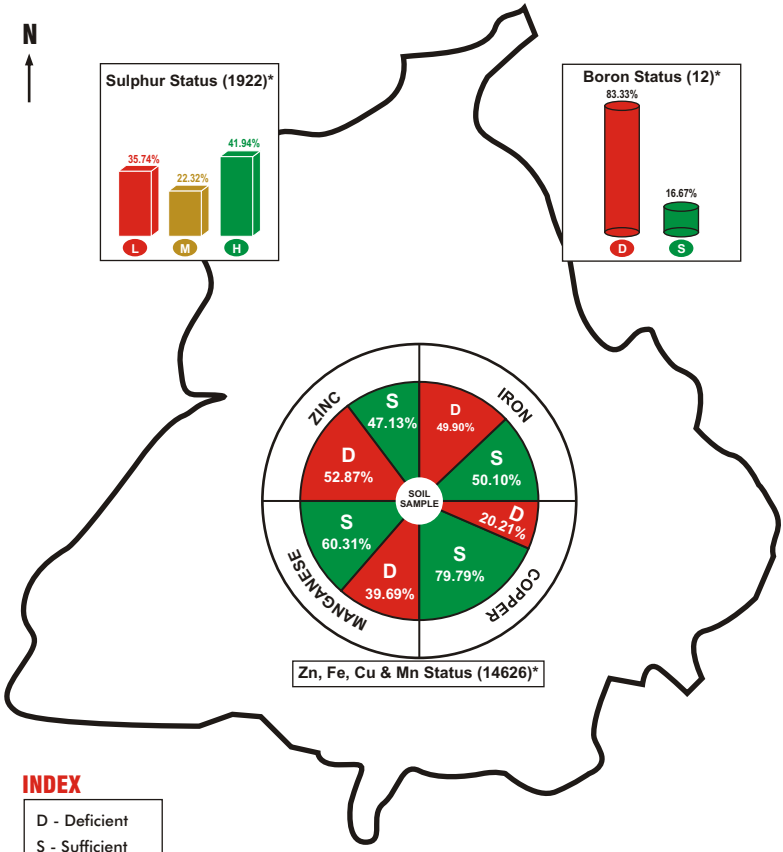
* The figure in ( ) parenthesis denotes the no. of samples analysed from September 1995 to September 2011



PUNJAB

Available Micronutrient and Sulphur Status in Punjab

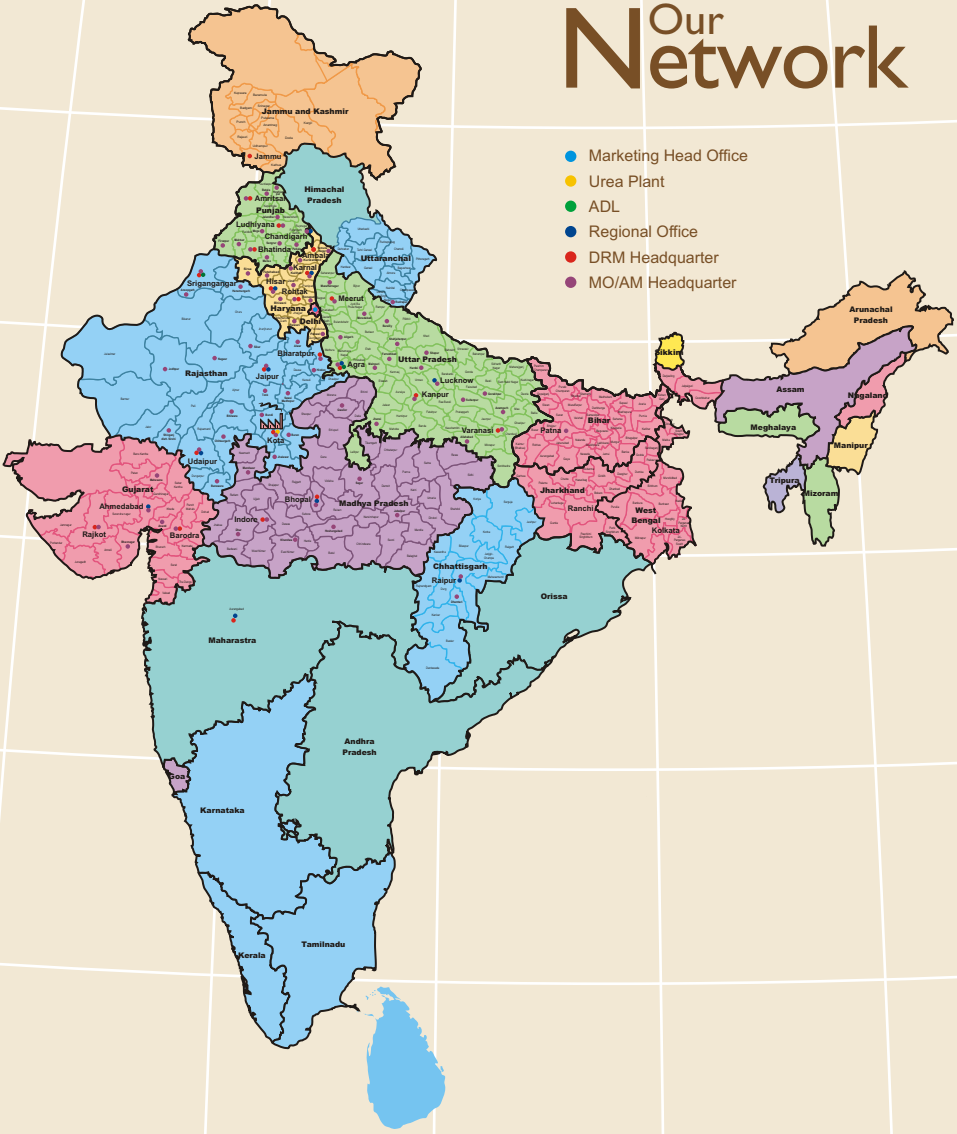
* The figure in ( ) parenthesis denotes the no. of samples analysed from September 1995 to September 2011



INDEX

D - Deficient
S - Sufficient
L - Low
M - Medium
H - High

Our Network


Marketing Head Office
Urea Plant
ADL
Regional Office
DRM Headquarter
MO/AM Headquarter
Jammu and Kashmir
Jammu
Himachal Pradesh
Amritsar
Punjab
Ludhiyana
Chandigarh
Bhatinda
Ambala
Kanpur
Uttaranchal
Hisar
Rohtak
Meerut
Haryana
Delhi
Sriganganagar
Bharatpur
Agra
Uttar Pradesh
Rajasthan
Jaipur
Lucknow
Kanpur
Kota
Varanasi
Patna
Bihar
Udaipur
Gujarat
Ahmedabad
Rajkot
Baroda
Bhopal
Madhya Pradesh
Indore
Jharkhand
Ranchi
West Bengal
Kolkata
Chhattisgarh
Raipur
Orissa
Maharastra
Andhra Pradesh
Goa
Karnataka
Tamilnadu
Kerala
Sikkim
Arunachal Pradesh
Assam
Nagaland
Meghalaya
Manipur
Tripura
Mizoram

हमारा अरमान
उन्नत किसान

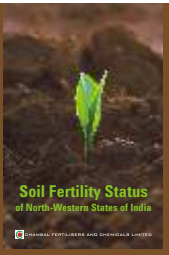
TOTAL FARM

Fertilisers

Speciality Products

Seeds

SOLUTION

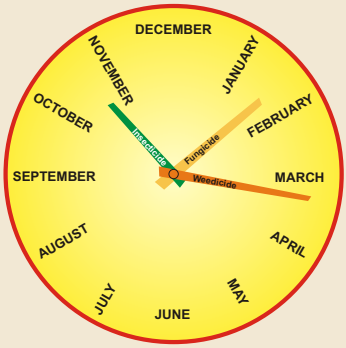


Weedicides

Insecticides

Fungicides

Uttam Krishi Inputs



Monthly Usage Table

Product	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Soil Health												
Sampoorn	■	■	■	■	■	■	■	■	■	■	■	■
Sulton	■	■			■	■	■	■	■	■	■	■
Uttam Recharge	■	■				■	■	■			■	■
Weedicide												
Attract	■	■				■	■	■				
Butaveer					■	■	■	■				
Isoveer	■										■	■
Kleeno				■	■	■				■	■	■
Metaveer			■	■					■	■	■	
Moto	■											■
Penveer					■	■	■			■	■	
Pritilaveer	■	■			■	■	■					
Proto					■	■						
Toto						■	■	■				
Veerkill			■	■		■	■				■	■
Weeza	■											■
Wheto											■	■
Zoro					■	■	■					

Monthly Usage Table

Product	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Insecticide												
Aceveer	■	■					■	■	■			
Acto	■	■	■	■	■	■	■	■	■		■	■
Alphaveer						■	■	■	■			
Bruno	■	■					■	■	■			■
Chlorveer	■	■	■	■		■	■	■	■	■	■	■
Cyperveer		■	■				■	■	■			
Imidaveer	■	■	■	■	■	■	■	■	■	■	■	■
Karbo	■	■							■			
Kelvo							■	■	■			
Lamdaveer		■	■					■	■			
Monoveer		■	■	■	■	■			■		■	■
Novel							■	■	■			
Proveer							■	■	■			
Tempo		■	■	■	■	■	■	■	■			
Toro-10						■	■	■	■			
Trizoveer		■		■	■	■	■	■	■			
Veercombi		■	■					■	■	■		
Veertap Power			■	■	■	■	■	■	■			
Fungicide												
Figo	■	■					■	■	■			
Hexaveer						■	■	■	■	■		
M-2	■	■	■	■		■	■		■	■	■	■
Manzim	■	■	■	■				■	■	■	■	■
Sulfino	■			■	■	■			■	■	■	■
Veer M-45	■	■	■	■			■	■	■	■	■	■
Veercon	■	■	■				■	■	■	■		
Veerzim	■	■	■	■			■	■	■	■	■	■

हमारा अरमान
उन्नत किसान

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