



**Department of Soil Science and  
Agricultural Chemistry  
Post Graduate Institute  
Mahatma Phule Krishi Vidyapeeth,  
Rahuri-413 722, Dist. Ahmednagar (MS)**



### Preamble

The Department of Soil Science and Agricultural Chemistry has its origin as Agricultural Chemistry section at the College of Agriculture, Pune which was established in 1905 under leadership of Dr. A. A. Meggit followed by Dr. H. S. Mann, Dr. D. L. Sahasrabudhe, Dr. J. A. Daji and Dr. Narayana. The Department was established in 1968 which was shifted to Central Campus, Rahuri during the year 1972. The department was renamed as the Department of Soil Science and Agricultural Chemistry in 2006.

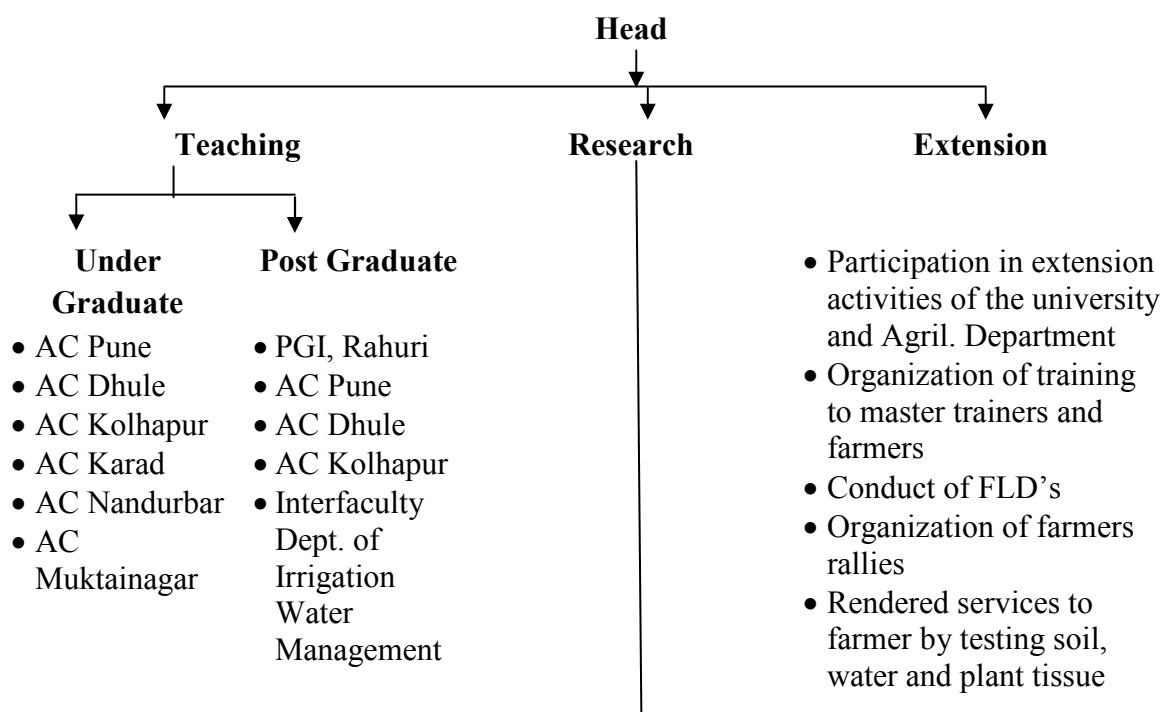
The Department of Soil Science and Agricultural Chemistry, Mahatma Phule Krishi Vidyapeeth, Rahuri has been entrusted with the major responsibilities of teaching, research and extension in the field of Soil Science and Agricultural Chemistry specifically in the jurisdiction of Western Maharashtra through colleges and research stations.

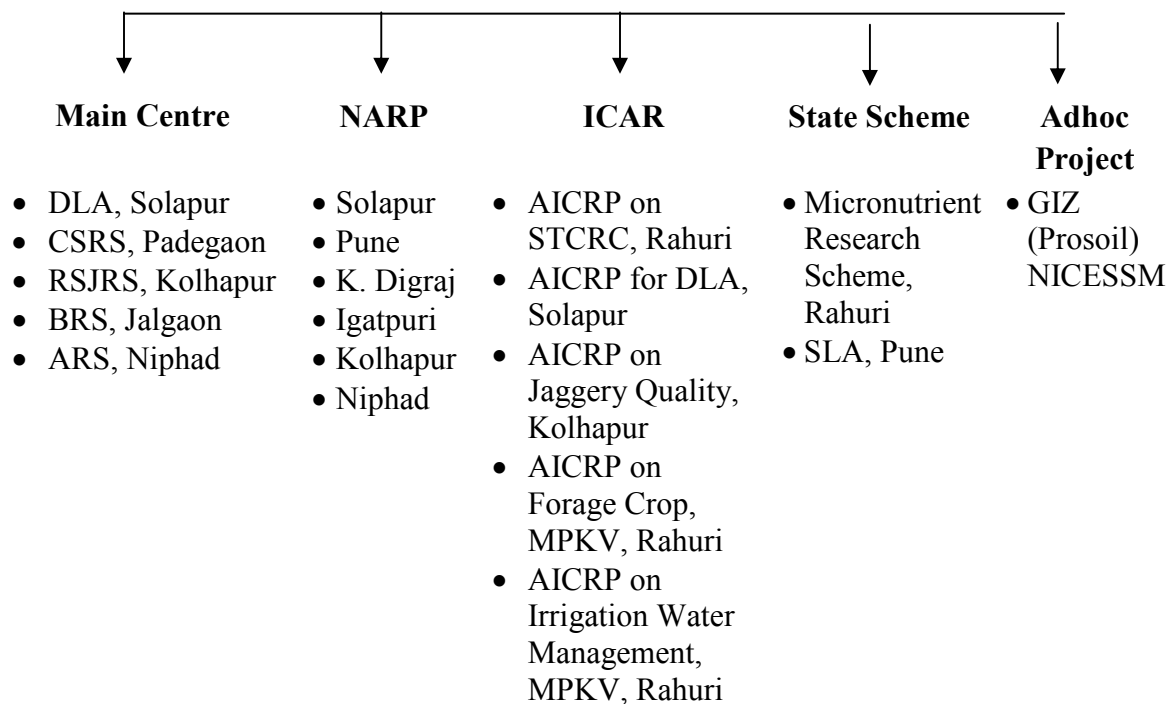
### Mandate

- To offer courses in the disciplines of Soil Science and Agricultural Chemistry for the undergraduate degree programmes in the faculties of Agriculture, Horticulture, Agricultural Engineering and Agri-business management.
- To offer courses in the disciplines of Soil Science and Agricultural Chemistry for M.Sc. (Agri.) and Ph.D. degree programmes.
- To undertake fundamental and applied research programme through post graduate students in Soil Science and Agril. Chemistry.
- To enhance the departmental research activities by developing soil based technologies to solve the farmers problems.

- To exchange information with other scientists and extension staff engaged in Soil Science and Agricultural Chemistry research through field trials, training, group discussions, seminars, symposia, workshops, conferences and scientific, technical and extension publications.
- To provide advisory service to both Government and public sector through analysis of soil, plant, irrigation water, manure and fertilizer samples along with respective recommendations.
- To render technical advice to farmers on specific problems of soil, plant and irrigation water.
- To collaborate with national, international and other research organizations and fertilizer, pesticide and sugar industries for undertaking research programme.
- To participate in extension activities organized by MPKV and Department of Agriculture, Maharashtra.

### Organization Setup





### Faculty

Sr. No.	Name	Designation	Location
<b>Post Graduate Institute, MPKV, Rahuri</b>			
1	Dr. B.D. Bhakare	Head	Rahuri
2	Vacant	Professor	Rahuri
3	Vacant	Professor	Rahuri
4	Dr. N. J. Ranshur	Professor (CAS)	Rahuri
5	Dr. M. R. Chauhan	Professor (CAS)	Rahuri
6	Dr. Ritu S. Thakare	Professor (CAS)	Rahuri
7	Dr. S. R. Patil	Associate Professor	Rahuri
8	Dr. S. R. Shelke	Assistant Professor	Rahuri
9	Dr. S.M. Todmal	Assistant Professor	Rahuri
<b>College of Agriculture, Pune</b>			
10	Vacant	Professor	Pune
11	Dr. A.B. Gosavi	Associate Professor	Pune
12	Dr. A.V. Bulbule	Associate Professor	Pune
13	Dr. P.C. Bhosale	Assistant Professor	Pune
14	Dr. D.H. Phalke	Assistant Professor	Pune
15	Dr. D.D. Sawale	Assistant Professor	Pune
16	Dr. A.B. Jadhav	Assistant Professor	Pune
17	Dr. A.V. Patil	Assistant Professor	Pune

18	Dr. Vedashri V. Patil	Assistant Professor	Pune
19	Dr. Vrushali N. Ghorpade	Assistant Professor	Pune
20	Shri. S.U. Deshmukh	Sr. Res. Asstt.	Pune
21	Vacant	Jr. Res. Asstt.	Pune
22	Vacant	Jr. Res. Asstt.	Pune
<b>College of Horticulture, Pune</b>			
24	Vacant	Assistant Professor	Pune
<b>College of Agriculture, Kolhapur</b>			
25	Vacant	Professor	Kolhapur
26	Dr. G.D. Patil	Professor (CAS)	Kolhapur
27	Dr. B.M. Kamble	Professor (CAS)	Kolhapur
28	Prof. V.R. Gaikwad	Assistant Professor	Kolhapur
29	Dr. V.N. Nale	Assistant Professor	Kolhapur
30	Dr. D.S. Potdar	Assistant Professor	Kolhapur
31	Vacant	Assistant Professor	Kolhapur
32	Vacant	Assistant Professor	Kolhapur
33	Vacant	Assistant Professor	Kolhapur
<b>College of Agriculture, Dhule</b>			
34	Vacant	Professor	Dhule
35	Vacant	Associate Professor	Dhule
36	Vacant	Associate Professor	Dhule
37	Dr. V. P. Bhalerao	Assistant Professor	Dhule
38	Prof. A.D. Jagdhani	Assistant Professor (Study leave)	Dhule
39	Prof. K.B. Patil	Assistant Professor	Dhule
<b>College of Agriculture, Nandurbar</b>			
40	Vacant	Associate Professor	Nandurbar
41	Dr. S.R. Tatpurkar	Assistant Professor	Nandurbar
42	Vacant	Assistant Professor	Nandurbar
43	Shri. N.R. Satpute	Jr. Res. Asstt.	Nandurbar
<b>College of Agriculture, Karad</b>			
44	Dr. S.S. Kolape	Associate Professor (CAS)	Karad
45	Dr. A.S. Tathe	Assistant Professor	Karad
<b>College of Agriculture, Muktainagar</b>			
46	Dr. R.D. Chaudhari	Assistant Professor	Muktainagar
47	Vacant	Assistant Professor	Muktainagar
<b>College of Agriculture, Halgaon</b>			
47	Dr. P.U. Bhosale	Assistant Professor	
<b>Agril. Technology School, Puntamba</b>			
48	Shri. R. N. Bhingarde	Jr. Res. Asstt.	Puntamba
<b>Agril. Technology School, Manjari Farm, Pune</b>			
49	Vacant	Sr. Res. Asstt.	Pune
<b>Soil Test Crop Response Correlation Project, MPKV, Rahuri</b>			
50	Dr. V.S. Patil	Soil Chemist	Rahuri
51	Dr. Kranti B. Patil	Sr. Research Assistant	Rahuri
52	Vacant	Sr. Research Assistant	Rahuri

	<b>Micronutrient Research Scheme, MPKV, Rahuri</b>		
53	Dr. A. G. Durgude	Analytical Chemist	Rahuri
54	Vacant	Jr. Res. Asstt.	Rahuri
	<b>AICRP on Irrigation Water Management, MPKV, Rahuri</b>		
55	Dr. C.R. Palwe	Sr. Scientist (Soil)	Rahuri
	<b>Integrated Farming System, MPKV, Rahuri</b>		
56	Dr. A.S. Takate	Jr. Soil Chemist	Rahuri
	<b>AICRP on Forage Crop, MPKV, Rahuri</b>		
57	Vacant	Jr. Res. Asstt.	Rahuri
	<b>Interfaculty Department of Irrigation Water Management, MPKV, Rahuri</b>		
58	Dr. K. D. Kale	Assistant Professor	Rahuri
	<b>AICRP on Citrus, MPKV, Rahuri</b>		
59	Vacant	Sr. Res. Asstt.	Rahuri
	<b>Zonal Agriculture Research Station, Solapur</b>		
60	Dr. V.M. Amrutsagar	Chief Scientist and Asso. Director of Research	Solapur
61	Vacant	Soil Scientist NARP	Solapur
62	Vacant	Soil Physicist (AICRP on DLA)	Solapur
63	Dr. A.B. Pawar	Soil Chemist, NARP	Solapur
64	Vacant	Soil Physicist NARP	Solapur
65	Vacant	Soil Engineer	Solapur
66	Shri. I.R. Bagwan	Sr. Res. Asstt.	Solapur
67	Vacant	Jr. Res. Asstt.	Solapur
68	Miss. Shubhangi R. Kadam	Jr. Res. Asstt. (Study leave)	Solapur
69	Shri. B.G Rathod	Jr. Res. Asstt. (Pooled to C.S. Rahuri)	Solapur
	<b>Agriculture Research Station, K. Digraj</b>		
70	Dr. R.B. Pawar	Professor (CAS)	Digraj
71	Dr. S.D. Kale	Assistant Professor	K. Digraj
	<b>Agriculture Research Station, Niphad</b>		
72	Dr. Y.J. Patil	Assistant Professor	Niphad
73	Dr. J.S. Chaure	Sr. Res. Asstt.	Niphad
	<b>Agriculture Research Station, Igatpuri</b>		
74	Vacant	Assistant Professor	Igatpuri
	<b>Banana Research Station, Jalgaon</b>		
75	Prof. Anjali R. Mendhe	Assistant Professor	Jalgaon
76	Vacant	Sr. Res. Asstt.	Jalgaon
	<b>Central Sugarcane Research Station, Padegaon</b>		
77	Dr. S.K. Ghodke	Soil Physicist	Padegaon
78	Dr. R.U. Nimbalkar	Sr. Res. Asstt.	Padegaon
79	Miss. Ujjawala A. Gavit	Jr. Res. Asstt.	Padegaon
	<b>NARP, Ganeshkhind, Pune</b>		
80	Dr. P.B. Jagtap	Associate Professor (CAS)	Pune
	<b>BNF, Pune</b>		
81	Dr. Shraddha V. Wable	Sr. Res. Asstt.	Pune
	<b>NARP, Kolhapur</b>		

82	Vacant	Associate Professor	Kolhapur
83	Dr. P.N. Gajbhiye	Assistant Professor	Kolhapur
<b>Regional Sugarcane &amp; Jaggery Research Station, Kolhapur</b>			
84	Dr. B.G. Gaikwad	Professor (CAS)	Kolhapur

### Academic programme

#### Annual intake capacity of M.Sc. (Agri.) and Ph.D. students

Name of campus	Intake Capacity	
	M.Sc. (Agri.)	Ph.D.
PGI, MPKV, Rahuri	18	04
College of Agriculture, Pune	06	-
College of Agriculture, Dhule	04	-
College of Agriculture, Kolhapur	06	-
<b>Total</b>	<b>34</b>	<b>04</b>

### M.Sc. (Agri.) Course Layout Minimum Credit Requirements

Sr. No.	Subject	Minimum credit(s)
1.	Major	20
2.	Minor	09
3.	Supporting	05
4.	Seminar	01
5.	Research	20
	<b>Total Credits</b>	<b>55</b>
	Compulsory Non Credit Courses	06

Sr. No.	Course Number	Course Title	Credits
<b>A) Major subjects (Min. 21 credits)</b>			
	SOILS -501	Soil Physics	2+1=3

	SOILS -502	Soil Fertility and Fertilizer Use	3+1=4
	SOILS -503	Soil Chemistry	2+1=3
	SOILS -504	Soil Mineralogy, Genesis Classification and Survey	2+1=3
	SOILS -506	Soil Biology and Biochemistry	2+1=3
	SOILS-511	Analytical Techniques and Instrumental Methods in Soil and Plant Analysis	0+2=2
	SOILS -513	Management of Problematic Soils and Water	2+1=3
<b>B) Minor Subjects (Min. 09 credits)</b>			
	SOILS -509	Soil, Water and Air Pollution	2+1=3
	BIOCHEM-501	Basic Biochemistry	2+1=3
	AGRON-505	Agro Meteorology and Crop Weather Forecasting	2+1=3
<b>C) Supporting Subjects (Min. 05 credits)</b>			
	PP-511	Mineral Nutrition	2+1=3
	STAT-512	Experimental Design	2+1=3
<b>D) Seminar (1 credit)</b>			
	SOILS-591	Master Seminar	0+1=1
<b>E) Master's Research (20 credits)</b>			
		Master's Research	0+20=20
<b>F) Non Credit Compulsory Courses</b>			
	PGS-501	Library and Information Services	0+1=1
	PGS-502	Technical Writing and Communications Skills	0+1=1
	PGS-503	Intellectual Property and its Management in Agriculture	1+0 =1
	PGS-504	Basic Concepts in Laboratory Techniques	0+1=1
	PGS-505	Agriculture Research, Research Ethics and Rural Development Programmes	1+0 =1
	PGS-506	Disaster Management	1+0=1

**Ph.D. Course Layout  
Minimum Credit Requirements**

Sr. No.	Subject	Minimum credit(s)
1.	Major	15
2.	Minor	08
3.	Supporting	05
4.	Seminar	02
5.	Research	45
	<b>Total Credits</b>	<b>75</b>
	Compulsory Non Credit Courses	15

Sr. No.	Course Number	Course Title	Credits
<b>D) Major subjects (Min.15 credits)</b>			
1.	SOILS -601	Advances in Soil Physics	2+0=2
2.	SOILS-602	Advances in Soil Fertility	2+0=2
3.	SOILS -603	Physical Chemistry of Soils	2+0=2
4.	SOILS-604	Soil Genesis and Micropedology	2+0=2
5.	SOILS-605	Biochemistry of Soil Organic Matter	2+0=2
6.	SOILS-606	Land Use Planning and Watershed Management	2+0=2
7.	SOILS -607	Soil Resource Management	3+0=3
8.	SOILS-691	Doctoral Seminar-I	0+1=1
9.	SOILS-692	Doctoral Seminar-II	0+1=1
<b>E) Minor Subjects (Min. 08 credits)</b>			
1.	AGRON-604	Advances in Crop Growth and Productivity	2+1=3
2.	PP-605	Climate Change and Crop Growth	2+0=2
3.	IWM-626	Soil, Water and Air Pollution	2+1=3
<b>F) Supporting Subjects (Min. 06 credits)</b>			
1.	AGRON-602	Crop Ecology	2+0=2
2.	MICRO-604	Current Topics in Soil Microbiology	2+0=2
3.	AGRON- 607	Integrated Farming System for Sustainable Agriculture	2+0=2
<b>F) Seminar ( 02 credit)</b>			
		Seminar I	0+1=1
		Seminar II	0+1=1
<b>G) Doctoral Research ( 45 credits)</b>			
		Doctoral Research	0+45=45
<b>F) Non Credit Compulsory Courses</b>			
1.	PGS-501	Library and Information Services	0+1=1
2.	PGS-502	Technical Writing and Communications Skills	0+1=1
3.	PGS-503	Intellectual Property and its Management in Agriculture	1+0 =1
4.	PGS-504	Basic Concepts in laboratory Techniques	0+1=1
5.	PGS-505	Agriculture Research, Research Ethics and Rural Development Programmes	1+0 = 1
6.	PGS-506	Disaster Management	1+0=1



## Laboratories and Instruments

There are four well equipped laboratories with sophisticated equipments. These laboratories not only used for teaching purpose but also render the advisory services to farmers by analyzing samples of Soil – Water – Plant and Fertilizers at the nominal charges.

### Instruments

- X-ray diffraction system
- Soil CO<sub>2</sub> flux system
- ARC, GIS software
- Pressure membrane apparatus
- Inductively Coupled Plasma Mass Spectrometer
- TOC analyzer
- Atomic Absorption Spectrophotometer
- Microwave digestion system
- Biological oxygen demand (BOD) Incubator
- Spectrophotometer
- Flame Photometer
- Automatic Nitrogen analyzer
- Soil moisture meters
- Muffle furnace
- High Speed Centrifuge machine
- Advanced Leaf area meter

## Research

- Generated dry land technologies for soil and water conservation and nutrient management for field crops.
- Developed 53 yield targeting equations for 36 different field crops and 25 recommendations are given for fertilizer use.
- Developed integrated nutrient management strategies for dry land crops and recommendations are given.

- Evolved the package of reclamation technologies for saline / sodic soil.
- Advocated the use of saline water through drip irrigation for vegetables and use of pressurized irrigation for fertigation.
- Developed integrated nutrient management system for higher sugarcane productivity and sugar recovery.
- Developed technology for good quality jaggery.
- Delineated the micronutrient deficient areas of Western Maharashtra and given recommendations of micronutrients for various crops.
- Developed the technology for enhancing the nutrient use efficiency for rice.
- Identified dominance of iron rich beidellite species of smectite in Shrink-swell soils of Maharashtra.
- Developed the technology for one time controlled application of post biomethanted spent wash as a liquid manure.
- Research work done on use of Diatomaceous earth as a source of silicon in cotton, tomato, onion, banana and pomegranate crop of Maharashtra.
- Sugarcane trash management technology.

## Linkages

- Indian Council of Agricultural Research (ICAR), New Delhi
- National Bureau of Soil Survey and Land Use Planning (NBSS and LUP), Nagpur
- Department of Agriculture and Co-operation, Govt. of India
- Central Research Institute for Dryland Agriculture (CRIDA), Hyderabad
- Indian Institute of Soil Science (IISS), Bhopal
- Indian Agricultural Research Institute (IARI), New Delhi
- Department of Science and Technology (DST), New Delhi

- Fertilizer Association of India (FAI), New Delhi
- Rashtriya Chemical and Fertilizers (RCF), Mumbai
- Potash Research Institute, Gurgaon, New Delhi
- National Information Centre (NIC), Pune

### On going research activities

- Development of IPNS based fertilizer equations for field crops.
- Carbon sequestrations
- Enhancement of nutrient use efficiency
- Fertigation based on STCR equations for different crops
- Integrated nutrient management
- Nutrition of horticultural crops
- Enhancing and sustaining soil quality
- Utilization of agro-industrial wastes
- Soil mineralogical studies
- Soil biology
- Research on micronutrients
- Soil Quality assessment and improvement

## Extension Programmes

### Training programmes / seminars organized:

- The State Level Seminar on ‘Fostering Soils to Meet Emerging Challenges in Agriculture’ was organized by the Rahuri Chapter of ISSS, Department of Soil Science and Agril. Chemistry, M.P.K.V., Rahuri on October 30-31, 2018.
- Training programme organized entitled “**Soil Health Card Interpretation as per Soil Test**” on October 3, 2018.

S. N.	Title	Sponsored	Date & Duration	Participants	Organized by
1	Soil Testing for Nitrogen, Sulphur and Boron	Department of Agriculture, Govt. of Maharashtra	5-7 November, 2017	30 participants	Jointly organized by the Department of Soil Science & Agril. Chemistry and Department of Agriculture, Govt. of Maharashtra
2	Soil, Water and Plant Analysis	Department of Agril. Extension	18-19 February, 2018	30 participants	Jointly organized by the Department of Soil Science & Agril. Chemistry and Department of Agri. Extension

### Publications

S. N.	Particulars	Year
<b>Booklet</b>		
1	Recommendations for Sustainable Agril. (Plant Nutrition, Soil and Water Conservation)	2014
<b>Books</b>		
1	Laboratory Methods for Analysis of Soil, Irrigation Water and Plants	2013
2	Ber- Dryland Fruit	2013
3	Agricultural Knowledge at a Glance	2013
4	Dryland Agriculture	2014
5	Objective Soil Science	2015
6	Key Notes on ACSS	2015
7	Dryland Fruit Crops	2016
8	GIS-Soil Fertility Maps of Western Maharashtra	2016
9	GIS-Soil Fertility Status of Western Maharashtra	2016
10	50 Years of Research on STCR	1967-2017
<b>Souvenir</b>		

1	Soil Health: A Key to Food Security 21-22 January, 2014	2014
2	Soil Health Awareness: A Prerequisite to Yield Sustainability 21-22 December, 2015	2015
<b>Compendium</b>		
1	Compendium Ph.D. Thesis	1963-2009
2	Compendium M.Sc. (Agri.) Thesis	1963-2009
3	Soil, Irrigation Water Analysis and Fertilizer Use	2013
4	Soil Testing for Available N, S and B	2015
5	Soil Testing for Soil Available N, S and B	2014

### Contact Details

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<b>Dist. Ahmednagar (MS)</b>	
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