



**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.

Faculty

S. N.	Name	Designation	Area of Specialization	Mobile No.	Email
1.	Dr. A.D. Kadlag	Professor & Head	Soil Fertility, Nutrient Management, Agro chemicals	08275033823	ad_kadlag@rediffmail.com adkadlag@gmail.com
2.	Dr. M. R. Chauhan	Professor	Soil Fertility	09403773465	mahavirsingchauhan5@gmail.com
3.	Dr. P. P. Kadu	Professor	Soil Chemistry, Soil Fertility, Soil Biology	07709911484	ppk_soilchemist@rediffmail.com
4.	Dr. N.J. Ranshur	Professor	Soil Physics, Soil Fertility, Soil Chemistry	09421886876 07875317673	prof.ranshur@gmail.com
5.	Dr. S.R. Patil	Associate Professor	Soil Biology & Biochemistry	09764085570	patil.shivajirao@rediffmail.com

6.	Dr. A.G. Durgude	Assistant Professor	Micronutrient, Fertilizer Management, Soil Survey	09420007731 09822598964	durgudeag@rediffmail.com
7.	Dr. S.R. Shelke	Assistant Professor	Soil Fertility, Salt Affected Soil	08275034693	shelke_shriganesh@rediffmail.com
8.	Dr. S. D. Kale	Assistant Professor	Soil Fertility	08888280885	sangramkale1@gmail.com

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	-
Total	34	04

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
	Total Credits	55
	Compulsory Non Credit Courses	06

Sr. No.	Course Number	Course Title	Credits
A) Major subjects (Min. 21 credits)			
	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) Minor Subjects (Min. 09 credits)			
	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
C) Supporting Subjects (Min. 05 credits)			
	PP-511	Mineral Nutrition	2+1=3
	STAT-512	Experimental Design	2+1=3
D) Seminar (1 credit)			
	SOILS-591	Master Seminar	0+1=1
E) Master's Research (20 credits)			
		Master's Research	0+20=20
F) Non Credit Compulsory Courses			
	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
	Total Credits	75
	Compulsory Non Credit Courses	15

Sr. No.	Course Number	Course Title	Credits
D) Major subjects (Min.15 credits)			
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
E) Minor Subjects (Min. 08 credits)			
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
F) Supporting Subjects (Min. 06 credits)			
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
F) Seminar (02 credit)			
		Seminar I	0+1=1
		Seminar II	0+1=1
G) Doctoral Research (45 credits)			
		Doctoral Research	0+45=45
F) Non Credit Compulsory Courses			
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 CO₂ 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
Booklet		
1	Recommendations for Sustainable Agril. (Plant Nutrition, Soil and Water Conservation)	2014
Books		
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

Souvenir		
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
Compendium		
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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