



CENTRES OF ADVANCED FACULTY TRAINING
DEPARTMENT OF SOIL SCIENCE & AGRICULTURAL CHEMISTRY
JNKVV, JABALPUR

Introduction:

History

Agriculture college, Jabalpur was established in 1955 (affiliated to Jabalpur University). M.Sc. (Ag.) & Ph.D. in Soil Science & Agril. Chemistry was started in 1962 and 1971 respectively. Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur was established on 2nd October, 1964. Faculty of Agriculture started functioning during 1967 and Department of Soil Science & Agril. Chemistry was one of the departments in the faculty.

Vision

To meet the needs of students and farmers by offering relevant, quality career education programmes, training and research in the field of Soil Science & Agricultural Chemistry to build up confidence among students and significantly commit to the expectations of our farming community.

Mandate

- To foster good standards in teaching and education at UG and PG levels on various aspects of Soil Science & Agricultural Chemistry including various practical aspects with the help of e-resources, power-point presentations and problem based learning.
- To undertake challenges in the field of Soil Science through research activities
- To disseminate the technologies and render advisory services to the farmers through different extension modes
- To collaborate with ICAR institutes for development of education and research programme in the field of Soil Science and Agril. Chemistry

Objective of CAFT:

To impart advanced training to the scientists and academic staff within the National Agricultural Research and Education system in the country to upgrade their skills in the frontier areas of science and technology relevant to their disciplines.

Faculty: Name & Designation (as on 30.09.2011):

College of Agriculture, Jabalpur

Dr. A. K. Rawat, Prof. & Head and PI, AINP on Soil Biodiversity & Biofertilizers

Dr. B. Sachhidanand, Professor and PI, AICRP on STCR

Dr. P. S. Kulhare, Professor and PI, AICRP on Micronutrients

Dr. A. K. Dwivedi, Professor

Dr. N. K. Khamparia, Sr. Scientist and PI AICRP on LTFE

Shri G. P. Tembe, Assoc. Professor

Dr. S. D. Sawarkar, Sr. Scientist
 Shri S. S. Baghel, Asstt. Professor
 Dr. Amit Updhyaya, Asstt. Professor

College of Agriculture, Rewa

Dr. G. Puri, Profesoer
 Dr. N. G. Mitra, Professor

College of Agriculture, Tikamgarh

Dr. B. L. Sharma, Professor
 Dr. B. K. Dixit, Asstt. Professor

College of Agriculture, Ganjbasoda

Dr. R. K. Bhatnagar, Asstt. Professor
 Dr. P. K. Jaga, Asstt. Professor

Human Resource Development:

Particulars of Short Courses / Training program for HRD conducted during XI plan period

<i>S. No.</i>	<i>Name of the Program</i>	<i>Period</i>	<i>No. of Participants</i>		
			<i>Internal</i>	<i>External</i>	<i>Total</i>
1.	2007 - 08 (I) Resources Management under Intensive Cropping System (II) Soil, Plant and Water Testing for Efficient Use of Input Resources of an Eco-Friendly Production System	06-02-2008 to 26-02-2008 04-03-2008 to 24-03-2008	07 06	09 07	16 13
2.	2008 - 09 (I) Impact of Resource Management on Soil productivity, Sustainability and Soil Health (II) Soil, Plant and Water Quality Management for an Eco-Friendly Agricultural production System	11-12-2008 to 31-12-2008 09-02-2009 to 01-03-2009	06 12	10 12	16 24
3.	2009 - 10 Resource Management for Sustaining Crop Production & Soil Health	03-03- 2010 to 23-03-2010	04	15	19

4.	2010 - 11 Integrated Plant Nutrient Management to Sustain Soil Fertility and Health for Higher Crop Production	09-12-2010 to 29-12-2010	12	13	25
5.	2011 - 12 Biotic and abiotic resources management for eco-friendly and sustainable agriculture	03-10-2011 to 23-10-2011	09	14	23

Infrastructure development (equipments etc.):

INFRASTRUCTURE

S. No.	Details	
1	Student's Laboratories (UG & PG)	02
2	PG Class room with visual aids	01
3	Library	01
4	CD Bank	
5	Question Bank for Preliminary ARS/NET Examination	01
6	Equipped Seminar hall	01
7	Green house	01
8	Commercial Biofertilizer Production Unit	01
9	Gamma Chamber	01
10	Environmental Growth Room	01
11	Soil Testing Laboratory	01
12	Micronutrient and Heavy Metal Testing laboratory	01
13	Soil Fertility Laboratory (Long Term Fertilizer Experiment)	01
14	Soil Microbiology Laboratory	01
15	Soil Test Crop Response Laboratory	01
15	Water distillation plant	01
16	Plant material digestion room	01
17	Soil Physics Laboratory	01

Available working equipments in the department

Sl. No.	Name of equipment	No. of equipments
1.	Electronic balance	8
2.	pH meter	6
3.	EC meter	4
4.	Water bath	1
5.	Spectronic 20	2
6.	Environmental shaker	3
7.	Horizontal shaker	3
8.	Vertical shaker	1
9.	Hot air oven	5
10.	Oil extractor	1
11.	Nitrogen estimation system	4
12.	Centrifuge machine	1
13.	Refrigerated centrifuge machine	1
14.	Atomic Absorption Spectrophotometer	2
15.	Spectrophotometer	2
16.	Flame photometer	3
17.	Distillation unit	2
18.	Deionizer	1
19.	Hot plate	1
20.	Muffle furnace	1
21.	Nephelometer	1
22.	Laminar air flow system	1
23.	Refrigerators	4
24.	Incubators	2
25.	Autoclaves	2
26.	Laboratory modular furniture	in 2 labs
27.	Research Microscope	1
28.	Student's microscope	10
29.	Stereomicroscope	1
30.	Gamma chamber	1
31.	Different equipments housed in Biofertilizer Production Center	

Renovation of Lecture Room/Laboratories: as mentioned under infrastructure

Library upgraded:

BOOKS IN DEPARTMENTAL LIBRARY

S. No	Discipline	No. of books
1.	Soil Chemistry	65
2.	Soil Fertility	165
3.	Soil Microbiology	67
4.	Soil Physics	53
5.	Soil Survey & Classification	75
6.	Soil Pollution	10
7.	Analytical Chemistry	50
8.	Environmental Science	42
9.	Computer Science	20
10.	Statistics	03
11.	General Aptitude and other	115
Total Books		665
12.	M.Sc.(Ag) Thesis	233
13.	Ph.D. Thesis	41
14.	Bound volumes of Journal of Indian Society of Soil Science	40

Publications (2008 onwards)

2008

Thakur, Anita and Rawat, A.K. : Effect of plant growth promoting rhizobacteria on root length of soybean (*Glycine max* Merrill L.), *Annals of Plant and Soil Research*, 11 (1).

Thakur, Anita, Rawat, A.K, Shrivastava Atul and Nema,Jyoti : Influence of wheat rhizobacteria on soybean (*Glycine max* Merrill L.) root length, *Plant Archives* 08 (1).

Sahu, R.K , Rawat, A.K. and Kauraw, D.L. : Impact of input resources on available nutrients content in profiles under rice crop on vertisol. Proceedings of national seminar on Land Resource Management and Livelihood Security and national convention of Indian Society of Soil Survey and Land Use Planning held at NBSS & LUP, Nagpur from 10th to 12th September, 2008.

- Sahu, R.K, Rawat,A.K.. and Kauraw ,D.L : Impact of input resources on chickpea under rice-chickpea cropping sequence in vertisol and nutrient status in different profiles. *JNKVV Res. J.* , 42 (1 & 2).
- Thakur, Risikesh, Kauraw, D.L. and Singh, Muneshwer : Impact of continuous application of nutrients inputs on cadmium, lead and nickel content in profiles of Vertisol. National Seminar on Land Resource Management and Livelihood Security, held at National Bureau of Soil Survey and Land Use Planning, Nagpur (M.H.), 10 to 12 Sep. pp 31 and abstract no. PO-43.
- Sawarkar, S.D., Thakur, Risikesh, Vaishya, U.K. and Singh, Muneshwer (2008). Impact of long-term continuous application of fertilizers and manure on soil fertility and yield of soybean in Vertisol. National Seminar on Land Resource Management and Livelihood Security, held at National Bureau of Soil Survey and Land Use Planning, Nagpur (M.H.), 10 to 12 Sep. pp 33 and abstract no. PO-47.
- S.S. Chauhan, Thakur, Risikesh and Sharma, G.D :Nickel: Its Availability and Reactions in Soil. *J. Indian Pollution Control*, 24(1): 57 – 62..
- Sharma, G.D., Sharma, B.L. and Khamparia, R.S. :Effect of Land Resource Management on Yield and Quality of Soybean Crop in Central India of Madhya Pradesh. National Seminar on Land Resource Management and Livelihood Security, to be held at National Bureau of Soil Survey and land Use planning, Nagpur (M.H.), 10 to 12 Sep. pp 31 and abstract no. PO43.
- Shahina Tabassum, U.K. Vaishya, K. Sammi Reddy, Muneshwar Singh, A.K. Biswas and Dr. R. S. Khamparia: Biological N₂ Fixation by Soybean as Influenced by Integrated Plant Nutrient Supply in a Vertisol (*Typic Haplustert*). *JNKVV, Res. Journal*, 42 (1) , 42 – 44.
- A.K. Dwivedi, R.K. Bhatnagar, S.C. Chouhan and U.K. Vaishya : Long Term influence in organic and inorganic manure on Soil fertility and production of soybean-wheat system in vertisols. *JNKVV, Res. Journal* , 42 (1) , 33 – 37.
- Jyoti Pandey, Jagdish Singh, Ajay Verma, A. K. Singh, A. K. Upadhyay, Mathura Rai and Sanjeet Kumar: Manifestation of heterosis in CMS based hybrids of Chilli (*Capsicum annum L.*). *Vegetable Science*. Vol. 35 (1): 25-30.

2009

- Sahu,R.K, Kauraw, D.L and Rawat, A.K: Effect of integrated resources on nutrient content and quality of rice crop. Proceedings of 1st Indian Agricultural Scientists and Farmers Congress on Technological Innovations for Enhancing Agriculture Production held at Chaudhary Charan Singh University, Merrut, October 03-04,185-190.
- Dwivedi , B.S and Rawat, A.K. : Influence of nutrient management in niger (*Guizotia abyssinica L.f.*): Proceedings of 74th Annual Convention of Indian Society of Soil Science held at IARI, New Delhi, December 22-25:194.
- Sahu, R.K, Kauraw,D.L. and Rawat,A.K. : Impact of input resource management on nutrient use efficiency and production economics of rice under rice-chickpea cropping sequence in vertisol. Proceedings of 74th Annual Convention of Indian Society of Soil Science held at IARI, New Delhi, December 22-25: 224.

- Thakur, Risikesh and Sawarkar, S.D. : Influence of Long Term Continuous Application of Nutrients and Spatial Distribution of Sulphur on Soybean-Wheat Cropping Sequence. *Journal of Soils and Crops*, 19 (2): 225 – 228.
- Thakur Risikesh, Sawarkar S.D., Vaishya U.K. and Singh Muneshwar : Long-Term Effect of Inorganic fertilizers and Organic Manure on Crop Yields, Nutrient uptake and Soil Health under Soybean – Wheat Cropping Sequence in a *Typic Haplustert*. *JNKVV, Research Journal*, 43 (2): 181 – 184.
- Lodha, Ashok Kumar, Thakur, Risikesh, Tabasshum, Shahina and Singh Smita: Effect of fertilizer and manure on weed incidence, depletion of nutrients by weeds and yield of soybean. *Indian Journal of Weed Science*, 41 (3&4): 201 – 203.
- Thakur, Risikesh, Singh, Muneshwer, Vaishya, U.K., Sawarkar, S.D. and Khamparia, R.S. : Impact of Long-Term Continuous Application of Different Agricultural Inputs on Soil Fertility Dynamics in a Vertisol (*Typic Haplustert*). Platinum Jubilee Symposium and 74th Annual Convention of Indian Society of Soil Science, held at New Delhi during 22 to 25 Dec., pp. 169.
- Sawarkar, S.D, Thakur, Risikesh, Vaishya, U.K., Khamparia, R.S. and Singh, Muneshwer Effect of inorganic and organic fertilizer nutrients on micronutrient uptake by soybean under soybean – wheat cropping sequence in Vertisol. Platinum Jubilee Symposium and 74th Annual Convention of Indian Society of Soil Science, held at New Delhi during 22 to 25 Dec., 2009 pp – 220.
- Vaishya, U.K., Sawarkar, S.D., Thakur, Risikesh, Khamparia, R.S. and Singh, Muneshwer Effect of Fertilizers and Manure on Soybean-Wheat Yield and Available Nutrients under Long Term Fertilizer Experiment in Vertisol. Platinum Jubilee Symposium and 74th Annual Convention of Indian Society of Soil Science, held at New Delhi during 22 to 25 Dec., 2009 pp – 149.
- Tripathi, P.N., S.D. Sawarkar and D.P. Dubey : Characterization of soils of Kymore Plateau and Satpura Hills, Madhya Pradesh. *AGROPEDOLOGY*, 19 (1) : 1 – 5.
- Thakur Risikesh, S.D Sawarkar, D.L. Kauraw and U.K. Vaishya : Effect of continuous application of different agricultural nutrient inputs on distribution of heavy metals cadmium, lead and nickel content in profiles of a Vertisol. *JNKVV, Research J.*, 43 (2): 169 – 173.
- Baghel S.S., Malik R.S. and Agarwal S.B. (2009) Effect of vermi compost of different animal excreta on yield and quality of fodder oat *JNKVV Res. J.* 43 (1) : 39-41.
- Sharma, G.D. and Thakur, Risikesh : Effect of Graded Doses of Phosphorus in Combination with Organic Manure and Biofertilizer on Production of Chickpea in Haplustert Clay Soil. *Bhartiya Krishi Anusandhan Patrika*, 24 (3 & 4): 98 – 101.
- Sharma, G.D., Thakur, Risikesh and Kauraw D.L. : Qualitative effect of organic inorganic and biofertilizers on crop of soybean. *Bhartiya Krishi Anusandhan Patrika*, 24 (2): 58 – 63.
- Thakur, Risikesh and Sharma, G.D. : Effect of Long-Term Application of Fertilizer and Organic Manure on Efficiency of Rhizobium bacteria in Soybean. *Bhartiya Krishi Anusandhan Patrika*, 24 (3 & 4): 95 – 97.

Sharma, G.D., Sharma, B.L. and Khamparia, R.S. :Yield and Nutrient Uptake of Rice Crop as influenced by Integrated Nutrient Management in Vertisols. Platinum Jubilee Symposium and 74th Annual Convention of Indian Society of Soil Science, to be held at New Delhi during 22 to 25 Dec., 2009 pp. 171 – 172.

Sharma, B.L., Sharma, G.D. and Khamparia, R.S. :Molybdenum Status in Mixed Red and Black Soil of Chhattisgarh plains of Madhya Pradesh. Platinum Jubilee Symposium and 74th Annual Convention of Indian Society of Soil Science, to be held at New Delhi during 22 to 25 Dec., 2009 pp – 70.

Jagdish Singh, A. K. Upadhyay, S. Singh and M. Rai : Total phenolics content and free radical scavenging activity of *Brassica* vegetables,*Journal of Food Science & Technology*, Vol. 46 (6):595-597.

Anant Bahadur, Jagdish Singh, K. P. Singh, A. K. Upadhyay and Mathura Rai : Morpho-physiological yield and quality trait in Lettuce (*Lactuca sativa*) as influence by use of organic manures and biofertilizers. *Indian Journal of Agricultural Sciences*. Vol. 79 (4): 282-285.

2010

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Thakur, Risikesh, Sawarkar, S.D., Kauraw, D.L. and Singh, Muneshwar : Effect of inorganic and organic sources on nutrients availability in a Verisol, *Agropedology*, 20 (1): 53-59.

Sawarkar, S.D, Thakur, Risikesh and Khamparia, R.S. : Impact of long term continuous use of inorganic and organic nutrients on micronutrients uptake by soybean in vertisol. *Journal of Soils and Crops*, 20 (2): 207 – 210.

Thakur, Risikesh, Sawarkar, S.D., Singh, Muneshwer and Khamparia, R.S. : Impact of Long - Term Application of Inorganic Fertilizers and Organic Manure on Soil Properties in a Vertisol. National Seminar on Land Resource Management: Land Degradation, Climate Change and Land Use Diversification, held at National Bureau of Soil Survey and Land Use Planning, Nagpur (M.H.), 08 to 10 Oct. pp 72 and abstract no. AO -79.

S.D. Sawarkar, Sudesh Kumar Bramhne and Risikesh Thakur : Effect of Nutrient Inputs and Bio-Fertilizer Application on Yield and Quality of Chickpea (*Cicer Arietinum* L.) in Vertisol. National Seminar on Land Resource Management: Land Degradation, Climate Change and Land Use Diversification, held at National Bureau of Soil Survey and Land Use Planning, Nagpur (M.H.), 08 to 10 Oct. pp 71 and abstract no. AO -78.

Sharma, Suraj, Kumar, Kauraw, D.L., Thakur, Risikesh, and Khamparia, R.S. : Effect of Long-Term Continuous Use of Inorganic Fertilizers and Organic Manure on Available Nutrients under Soybean-Wheat Cropping Sequence in a Vertisol. National Seminar on Land Resource Management : Land Degradation, Climate Change and Land Use Diversification, held at National Bureau of Soil Survey and Land Use Planning, Nagpur (M.H.), 08 to 10 Oct. pp 73 and abstract no. AO-80

- Sawarkar, S.D., Bramhne, Vijay, Kumar and Thakur, Risikesh : Effect of Inorganic, Organic and Biofertilizer on Biomass Partitioning, Growth, Nutrient Uptake and Productivity of Isabgol (*Plantago Ovata* Forsk). National Seminar on Land Resource Management: Land Degradation, Climate Change and Land Use Diversification, held at National Bureau of Soil Survey and Land Use Planning, Nagpur (M.H.), 08 to 10 Oct. pp 09 and abstract no. AO-11.
- Sharma, G.D., Thakur Risikesh and Dwivedi, B.S. (2010). Qualitative effect of organic source with inorganic fertilizers on soybean. Indian Science Congress, held at New Delhi, 22 – 23 Nov.
- Thakur Risikesh, Sharma, G.D. and Dwivedi, B.S. (2010). Effect of Long-Term Application of Fertilizer and Organic Manure on Efficiency of Rhizobium bacteria in Soybean. Indian Science Congress, held at New Delhi, 22 – 23 Nov.
- Sharma, G.D., Sharma, B.L. and Khamparia, R.S. (2010). Molybdenum Status in Medium Black Soil of Jabalpur district of Madhya Pradesh. National Seminar on Land Resource Management : Land Degradation, Climate Change and Land Use Diversification, to be held at National Bureau of Soil Survey and land Use planning, Nagpur (M.H.), 08 to 10 Oct. pp 81 and abstract no. AO-91.
- Sharma, B.L., Sharma, G.D. and Khamparia, R.S. :Molybdenum Status in Medium Black Soil of Chhatarpur district of Madhya Pradesh. National Seminar on Land Resource Management : Land Degradation, Climate Change and Land Use Diversification, to be held at National Bureau of Soil Survey and land Use planning, Nagpur (M.H.), 08 to 10 Oct. pp 80 and abstract no. AO-90.

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- Thakur Anita, De, Kantishree and Rawat, A.K: Response of organic and inorganic plant nutrient sources on Sweet Basil (*Ocimum Basilicum* L.) for sub tropical region. *Plant Archieves* 11 (1) pp.253-255.
- Thakur Risikesh, Sawarkar S.D., Vaishya U.K. and Singh Muneshwar : Impact of Continuous Use of Inorganic Fertilizers and Organic Manure on Soil Properties and Productivity under Soybean-Wheat Intensive Cropping of a Vertisol. *Journal of Indian Society of Soil Science*, 59 (1) : 01-08.
- Thakur Risikesh, Kauraw D.L. and Singh Muneshwar: Profile Distribution of Micronutrient Cations in a Vertisol as Influenced by Long Term Fertilizer Application. *Journal of the Indian Society of Soil Science*, 59 (2) : 01-08.
- Kalyan Singh, Yogeshwar Singh, A. K. Upadhyay and S. Mori : Phytosiderophore-based molecular approach for enhanced iron acquisition to increase crop production under high pH calcareous soils. *Indian Journal of Agricultural Sciences*. Vol. 81 (8): 679-689.

Bulletins

- A.K.Rawat, S.K.Khatik (deceased); D.L.N.Rao and A.K.Saxena (2008): Soybean rhizobial inoculants survey in Madhya Pradesh (2002-2007). Released during group meeting of AINP on Biofertilizers held at Y.S.Parmar University of Horticulture & Forestry, Solan from 11-13 September, 2008.

- Khamparia, R.S., Singh, M.V., Sharma B.L., Kulhare, P.S. and Sharma G.D. (2010) : Four Decades of Research in Micro, Secondary Nutrient and Pollutant Element in Crops and Soils of Madhya Pradesh.

Folders

- A.K.Rawat, B.S.Dwivedi and D.L.N.Rao (2008): Biofertilizer based nutrient management for tribal areas of Madhya Pradesh.
- Sharma, B.L., Sharma, G. D. & Khamparia, R. S. (2009): Qlyksa esa xa/kd dk egRo]
- Sharma, B.L., Sharma, G.D. & Khamparia, R.S. (2009): QlyksaRiknu esa tLrs dk egRo]
- Sharma, B.L., Sharma, G. D. & Khamparia, R. S. (2009): e`nk ijh{k.k dh vko”;drk]
- Girish Puri, Y.M. Dharudu and B. Sachidanand (2008) fertilizer recommendation for targeted yield of crops in Madhya Pradesh.
- MkW- fxjh”k iqjh ,oa ok;- ,e- /kjMq- e`nk ijh{k.k ds vk/kkj ij e-iz- esa Qlyksa dh yf{kr mit ds fy;s moZjdk ds dh vuq”kalk

Teaching aids

A.K.Rawat, L.N.Verma and U.K.Vaishya: “ *Microbes in action* ” A laboratory manual of soil microbiology for under graduate and post graduate students.

Sharma B.L., Sharma G.D. Thakur, R.K. and Khamparia, R.S. :Technical Manual on Soil, Plant and Water Testing.

Sharma B.L., Sharma G.D. and Khamparia, R.S.: Practical Manual on Soil, Water and Air Pollution for M.Sc. Previous course.

Kulhare, P.S. : Laboratory Manual on Introduction to soil science.

Kulhare, P.S. :Laboratory Manual on Soil chemistry, soil fertility and nutrient management.

Question Bank for ARS/NET examination

Academic achievements

- M.Sc. (Ag.) students passed out: > 500 students
- Ph.D. students passed out : > 45 students
- SRF availed : 3
- Students placement : as ADAs (M.P.PSC), Banks, UPSC, ICAR , Private companies and other organizations
- Young scientist award : 2 (M.P. Council of Science & Technology)
- ISSS zonal award : 1
- Best poster award : 3
- Aryabhata Award for best paper presentation to Ph.D student
- Abroad for Ph.D.

Fellows of Indian Society of Soil Science (FISS) :

1987 Dr. S.B. Sinha

1992 Dr. Ram K. Gupta

1998 Dr. V.S. Tomar
1999 Dr. S.K. Banerjee
2009 Dr. S.S. Tomar

Financial Statement

Expenditure under CAFT during XI plan

Head	2007-08	2008-09	2009-10	2010-11	2011-12 (Tentative)
Operating cost of Training	2,69,266	2,90,473	1,52,673	3,03,691	3,50,000
Recurring Contingency	1,91,915	1,29,734	1,03,400	1,63,047	2,00,000
Non-Recurring Contingency	-	-	-	-	-
T.A.	-	-	5,634	-	6,000
Library	47,538	17,811	30,000	29,951	29,900
Total	5,08,719	4,38,018	2,91,707	4,96,689	5,85,900