



**CENTRES OF ADVANCED FACULTY TRAINING  
DIVISION OF PLANT PATHOLOGY,  
INDIAN AGRICULTURAL RESEARCH INSTITUTE  
NEW DELHI**

## **Introduction**

The Division of Plant Pathology is nearly 100 years old. It was originally established in 1905 as Mycology section of Imperial Agricultural Research Institute (IARI) at Pusa, Bihar to initiate mycological and plant pathological research in India. The sectional status was raised to the status of Division of Mycology in 1943-44 after the Institute was shifted to New Delhi. Subsequently, it was named as Division of Mycology and Plant Pathology in 1947-48 and later it was designated as Division of Plant Pathology. Two Regional Stations were established at Pune (Maharashtra) and Kalimpong (West Bengal) in 1956 and 1939 as the nucleus of research on plant viruses.

Detection of pathogens, diagnosis of diseases and ultimately management of disease risks have been the main fabric of Divisional research. The Division has evolved over the years with four major sections, i.e., Mycology, Fungal Pathology, Bacteriology and Virology. Herbarium Cryptogamae Indiae Orientalis (HCIO) and Indian Type Culture Collection (ITCC), Center for Advanced Studies, (CAS) in Plant Pathology and Referral Center for virus testing of tissue culture raised plants are its "Life Lines". The Division has highly trained scientific, technical and field staff. It has well equipped laboratories to work on diagnosis and characterization of plant pathogens, electron microscopy, cloning of genomes, electrophoresis, sequencing, use of PCR in disease diagnosis, tissue culture, plant transformation etc. The mandates of the Division are

- To conduct basic and applied research leading to detection, identification and management of plant pathogens
- To serve as a Centre for academic excellence in the area of Post-Graduate education in Plant Pathology
- To provide national leadership in plant pathological research through the development of new concepts and technologies

## **Objective of CAFT:**

CAFT in Plant Pathology, Division of Plant Pathology, Indian Agricultural Research Institute envisages imparting advanced training to the scientists and academic staff within the National Agricultural Research and Education System in the country to upgrade their skills in frontier areas of Plant Pathology.

**Faculty: Name & Designation (as on 30.09.2011):**

S.No	Name	Designation
<b>MYCOLOGY</b>		
1.	Dr. R.K. Sharma	Senior Scientist
2.	Dr. (Ms.)T. Prameela Devi	Senior Scientist
3.	Dr. (Ms.)Uma Maheshwari	Senior Scientist
4.	Dr. Deeba kamil	Scientist
<b>FUNGAL PATHOLOGY</b>		
5.	Dr.(Ms.) Pratibha Sharma	Principal Scientist
6.	Dr. U.D. Singh	Principal Scientist
7.	Dr. (Ms.) Rashmi Aggarwal	National Fellow/ Principal Scientist
8.	Dr. S.C. Dubey	Senior Scientist
9.	Dr. Parimal Sinha	Senior Scientist
10.	Dr. Robin Gogoi	Senior Scientist
11.	Dr. Bishnumaya Bashyal	Scientist
<b>PLANT VIROLOGY</b>		
12.	Dr. R.K. Jain	Head
13.	Dr. V.K. Baranwal	Principal Scientist
14.	Dr. G.P.Rao	Principal Scientist
15.	Dr.(Ms.) Shelly Praveen	Senior Scientist
16.	Dr. Bikash Mandal	Senior Scientist
17.	Dr. Kajal Kumar Biswas	Senior Scientist
18.	Dr. Prachi Sharma	Scientist
19.	Dr. Prabha K	Scientist
20.	Dr. Saritha R.K.	Scientist
<b>PLANT BACTERIOLOGY</b>		
21.	Dr. A. Kumar	Principal Scientist
22.	Dr. Dinesh Singh	Senior Scientist
23.	Dr. Kalyan Kr. Mondal	Senior Scientist

**Human Resource Development:**

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

Year	No.	Topic	No. of trainee(s)	No. of participants	
				Internal	External
2007-2008	1	Biocontrol of plant pathogens	21	3	18
	2	Detection of bacterial plant pathogens: Symptomatology to advanced techniques	15	3	12
2008-09	1	Biodiversity, taxonomy, conservation and characterization of fungi	17	1	16
	2	Molecular diagnostics of fastidious prokaryotes, viruses and viroids	20	-	20
2010-11	1	Viral genomics and transgenic development	20	2	18
	2	Pathogenomics and diagnostics-cloning and			

		sequencing and bioinformatics of genomic regions of plant pathogens and developing diagnostics	15	-	15
2011-12	1	<i>Monitoring and Forecasting of Plant Disease Epidemics under Climate Change Scenario</i>	22	1	21

**Infrastructure development (equipments etc.):**

Year	Works and Renovation	Equipment	Strengthening of Library (Rs)
2007-08	-	-	48,887
2008-09	-	-	38,696
2009-10	-	-	11,895
2010-11	-	-	6,100
<b>Total</b>	-	-	<b>1,05,578</b>

**Awards/Recognitions:**

Year	Scientist	Award received	Institution Associated
2007	R.K. Jain	Fellow, Indian Virological Society	IVS, New Delhi
	V.G.Malathi	Khwarizmi International Award	Iran Govt.
2008	K.K.Mandal	Prof. M.K.Patel Memorial Award	IPS, New Delhi
	Robin Gogoi	Dr. H.C. Dubey Outstanding Scientist Award	Indian Society of Mycology and Plant Pathology
2009	V.G.Malathi	Best Woman Agrl. Scientist Award	ICAR
	R.K. Jain	President, IPS	IPS, New Delhi
2011	R.K.Jain	VASVIK Award - 2007	
		Shri Harikishan Shastri Memorial Award 2010	Post Graduate School, IARI

**Publications:**

Year	Publications (Research Papers)		
	International	National	Total
2007-08	11	29	40
2008-09	8	30	38
2009-10	15	47	62
2010-11	22	41	63

## PUBLICATIONS-2007-08

1. Aggarwal, R., Das, Soma, Jahani, Mehdi and Singh, D.V. (2007). Histopathology of spot blotch [*Bipolaris sorokiniana* (teleomorph: *Cochliobolus sativus*)] infection in wheat. *Acta Phytopathologica*.
2. Aggarwal, R., Tiwari, A.K., Dureja, P. and Srivastava, K.D. (2007). Quantitative analysis of secondary metabolites produced by *Chaetomium globosum* Krunze ex Fr. *J.Biological Control* 21: 163-168.
3. Ahammed, S.K., Aggarwal, R., Sneh and Kapoor, H.C. (2007). Production, partial purification and characterization of extracellular xylanase from *Chaetomium globosum*. *J. Plant Biochem Biotechnol*.
4. Ameer Basha, S. and Chatterjee, S.C. (2007). Effect of PGPR on *S. sclerotiorum* infection through elicitation of Phenylalanine Ammonia Lyase in chickpea, *Indian Phytopath.* 60(3): 313-316.
5. Bag, Sudeep., Singh R.S. and Jain R.K. (2007). *Agrobacterium* - mediated transformation of groundnut with coat protein gene of Tobacco streak virus. *Indian J. Virol.* 18 (2): 65-69.
6. Bag, Sudeep., Agarawal, Surekha and Jain R.K.. (2007). Sequence diversity in the coat protein of Papaya ringspot virus isolate from different location in India. *Indian Phytopath.* 60 (2): 244-250.
7. Baranwal, V.K., Singh, R.P. and Gupta K.N. (2007). Polymerase chain reaction detection of greening bacterium (*Candidatus Liberibacter asiaticus*) and Citrus mosaic virus in citrus tissues, by means of a simplified template –preparation protocol. *Canadian J Plant Pathol* 29:190-196.
8. Biswas, K. K., Malathi, V. G. and Varma, A. (2008). Diagnosis of Symptomless Yellow mosaic begomovirus Infection in Pigeonpea by using Cloned Mungbean yellow mosaic India virus as Probe. *J. Plant Biochemistry and Biotechnology*, 17: 9-14
9. Devakumar C., Kandhari, J., Rajendra Kumar, Dhiraj Kumar and Rajesh Kumar (2007). Synthesis and Antifungal A.ctivity of some Synthetic Halides derived from 4-Aza-1-azoniabicyclo [2,2,2]octane against Sheath Blight (*Rhizoctonia solani* Kuhn) of Rice. *Pesticide Rresearch Journal* 19 (1): 25-27.
10. Dubey, S, C. (2007). Integrating bioagent with botanical and fungicide in different mode of application for the better management of web blight and mungbean yield. *Indian Journal of Agricultural Sciences* 77: 162-165.
11. Dubey, S.C. and Singh, S.R. (2008). Virulence analysis and oligonucleotide fingerprinting to detect diversity among Indian isolates of *Fusarium oxysporum* f. sp. *ciceris* causing chickpea wilt. *Mycopathologia*. 1573-0832 ODI 10.1007/s11046-008-9090-7 (online from February 12, 2008)
12. Goltapeh, E.M., Aggarwal, R. Pakdaman, B.S. and Renu (2007). Molecular characterization of *Aspergillus* species using Amplicon Length Polymorphism (ALP) using Universal Rice Primers. *J. Agricultural Technology* 3(1): 29-37.

13. Gopal, K., Pradeepthi, R.E., Gopi, V., Ahammed, S.K., Sreenivasulu, Y., Reddy, M.K., Baranwal,V.K. and. Purushotham, K (2007) Occurrence, molecular diagnosis and suitable time of detection of citrus greening disease in sweet orange. *Acta Phytopathologia et Entomologica Hungarica* 42:49-58
14. Hosagoudar V.B., Riju, M.C. and Uma Maheswari. C. 2008 *Asterina dallasica Petrak* - a new record to India. *Indian Journal of Science and Technology* 1 : 1-2.
15. Honnareddy, N. and Dubey, S.C. (2007). Morphological characterization of Indian isolates of *Fusarium oxysporum* f. sp. *ciceris* causing chickpea wilt. *Indian Phytopath.* 60: 373-376.
16. Jain, R.K., Bag, S. Umamaheswaran, K. and Mandal, B. (2007). Natural infection by tospoviruses of cucurbitaceous and fabaceous vegetable crops in India. *J. Phytopath.* 155: 22-25.
17. Jambhulkar, Prashant and Kandhari, Janki (2007). Effect of pre-storage treatment with bio-pesticides for the control of seed borne fungi in rice. *Indian Phytopath.* 60 (2): 231-236
18. Juan C. Dí'az-Pe'rez, Ron Gitaitis, Mandal, B. (2007). Effects of plastic mulches on root zone temperature and on the manifestation of tomato spotted wilt symptoms and yield of tomato. *Scientia Horticulturae* 114:90-95.
19. Kandhari, Janki. (2007). Management of sheath blight of rice through fungicides and botanicals. *Indian Phytopath.* 60 (2): 214-217
20. Majumder, S. ,Arya, Pant, R. P. and Baranwal, V. K. (2007) Shallot virus X in Indian shallot, a new virus report for India. *Plant Pathology- New Disease report* 57:396.
21. Mandal, B., Mandal, S., Csinos, A. S., Martinez, N., Culbreath, A. K. and Pappu,H. R. (2008). Biological and Molecular Analyses of the Acibenzolar-S-Methyl-Induced Systemic Acquired Resistance in Flue-Cured Tobacco against Tomato spotted wilt tospovirus . *Phytopathology* 98:196-204.
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23. Mandal,,B., Wells1, M.L. Martinez-Ochoa1,N., Csinos1, A.S. and Pappu, H.R. (2007). Symptom development and distribution of Tomato spotted wilt virus in flue-cured tobacco. *Annals of Applied Biology* 151:67-75.
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25. Mishra, Anil K., and Shelly Praveen (2007) Differential Role of Tomato Gemini Virus and Cucumovirus in Plant Organogenesis *J. Plant Biochemistry & Biotechnology* 16(1): 49-51.
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28. Nayak, D., Shanti, M. L., Bose, L. K., Singh, U. D. and Nayak, P. (2008). Pathogenicity association in *Xanthomonas oryzae* pv. *Oryzae*- the causal organism of rice bacterial blight disease. *ARPN Jr. Agric. & Bio. Sc.* 3 (1): 12-27
29. Parameswari,B., Mangrauthia S.K, Praveen, S. and Jain, R.K. (2007) Complete genome sequence of an isolate of Papaya ringspot virus from India. *Arch Virol* 152: 843-845.
30. Prameela Devi,T., Chowdhry, P.N., Gupta, Durga, Mathur, Nita and Singh, O.P. (2007). A New Species of *Xylochia* from India. *Indian phytopath*, 60(1) 92-94.
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32. Sain, S.K., Gour,H.N. and Sharma,Pratibha (2007). Evaluation of botanicals and PGPRs against *Xanthomonas campestris* pv. *campestris*, an incitant of black rot of cauliflower, *Journal of Ecofriendly Agriculture* 2 (2 ): 178-182 : 2007.
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## PUBLICATIONS ( 2008-09)

1. Aggarwal, R.Vandana Sharma,Lalit L.Kharbikan, and Renu (2008).Molecular characterisation of *Chaetiminum* spp. using URP-PCR. *Gen. & Mol Bio.* 31(4): 943-946.
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3. Ahammed, S.K., Aggarwal, R, Sneh and Kapoor, H.C. (2008). Production, partial purification and characterization of extracellular xylanase from *Chaetomium globosum*. *J. Plant Biochem Biotechnol.* 17: 95-98.
4. Ahammed, S.K., Aggarwal, R. and Srivastava, K.D. (2008). Production of extracellular proteins and cellulases by different isolates of *Chaetomium globosum*. *Indian Phytopath.* 61(4): 437-440.
5. Bag, Sudeep, R.S. Singh and R.K. Jain. (2008). Further analysis of coat protein gene sequences of *Tobacco streak virus* isolates from diverse locations and hosts in India. *Indian Phytopath.* 61(1) : 118-123.
6. Biswas. K. K. 2008. Molecular diagnosis of *Citrus tristeza virus* in mandarin (*Citrus reticulata*) orchards of Darjeeling hills of West Bengal. *Indian J. Virol.*, 19:26-31
10. Chandra Sulekha, Deepali Jain, Amit Kumar Sharma and Pratibha Sharma. (2009) Coordination Modes of a Schiff Base Pentadentate Derivative of 4-Aminoantipyrine with Cobalt (II), Nickel (II) and Copper (II) Metal Ions: Synthesis, Spectroscopic and Antimicrobial Studies. *Molecules.* 1-17.
11. Deka Utpal, K., Dutta, P. K, Gogoi, Robin and Borah, P. K. (2008). Management of leaf spot disease complex of betelvine by bioagents and plant extracts. *Indian Phytopath.* 61(3):337-342.
12. Dubey, S.C. and Singh, S.R. (2008). Virulence analysis and oligonucleotide fingerprinting to detect diversity among Indian isolates of *Fusarium oxysporum* f.sp. *ciceris* causing chickpea wilt. *Mycopathologia* 165: 389-406.
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14. Ghosh, D. K. Aglave Balaji, Bhanare Kanchan and Baranwal V. K. (2008). PCR based detection of Citrus yellow mosaic disease from Vidarbha region of Maharashtra. *Indian Phytopath.* 60: 520-526.
15. Ghosh, D. K. Aglave Balaji, and Baranwal V. K. (2008). Simultaneous detection of one RNA and one DNA virus from naturally infected citrus plants using duplex PCR technique. *Current Science* 94: 1314-1318.
16. Gogoi, Robin, Deva Nath. H. K. and Borah, T. R(2008). *In vivo* screening of ginger germplasm for the resistance sources of rhizome rot complex in Assam. *Pestology* 32(6): 20-22.

17. Gogoi, Robin, Deva Nath. H. K. and Borah, T. R. (2008). Diversity of Pathogens inciting rhizome rot of ginger in Assam and Arunachal Pradesh. *J. Mycol. Pl Pathol.* 38(2): 291-294.
18. Jahani, M., Rashmi Aggarwal K.D. Srivastava and Renu (2008). Genetic differentiation of *Bipolaris* spp. based on RAPD markers. *Indian Phytopath.* 61(4): 449-455.
19. Jambhulkar Prashant and Janki Kandhari (2008). Persistence of plant products, antagonists and fungicides on rice seeds after storage. *Indian phytopath.* 61: 523-525.
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23. Mangrauthia, Satendra K., B. Parameswari, R.K. Jain and Shelly Praveen. (2008). Role of genetic recombination in the molecular architecture of Papaya ringspot virus *Biochemical Genetics* 46 (11):835-846
24. Mangrauthia, Satendra K., R.K. Jain and Shelly Praveen. (2008). Sequence motifs comparisons establish a functional portrait of a multifunctional protein HC-Pro from papaya ringspot virus. *J. Plant Biochemistry & Biotechnology* 17 (2):201-204
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27. Mondal, K.K., Sugha, S.K. and Bhar, L.M. (2008). Antibacterial potential of panchagavya-based microbes against bacterial wilt of tomato. *Indian Phytopath.* 61:353-354.
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29. Nayak, D., Bose, L.K., Singh, U.D., Singh, S., Nayak, P. (2008). Measurement of genetic diversity of virulence in populations of *Xanthomonas oryzae* pv. *oryzae* in India. *Communications in Biometry and Crop Science* 3 (1), 16-28.
30. Praveen Shelly, Mangrauthia Satendra K, Singh Priyanka and Mishra Anil K (2008) Behavior of RNAi suppressor protein 2b of *Cucumber mosaic virus* in planta in presence and absence of virus. *Virus Genes* 37:96-102.
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33. Sain SK, Gour HN and Sharma Pratibha (2008). Pathogenic Variability and Antibiotic Sensitivity in *Xanthomonas campestris* pv *campestris* isolates Causing Black rot of Cauliflower. *Journal of Mycology Plant Pathology* 509-604
34. Sharma, Ram Roshan, Rajbir Singh, Dinesh Singh, Ram Kishore Gupta (2008). Influence of row covers and mulching interaction on leaf physiology, fruit yield and albinism incidence in 'Sweet Charlie' strawberry (*Fragaria x ananassa* Duch). *Fruits* 63: 103 – 110.
35. Singh Dinesh and A. K. Thakur (2008). Effect of juice extraction methods on the quality and organoleptic acceptability of kinnow juice. *New Agricult.* 18 (1,2): 95- 98.
36. Singh, Dinesh, P.C. Sarkar, R. R. Sharma and S. Srivastava (2008). Effect of lac based formulations on incidence of *Penicillium italicum* on kinnow fruits. *Indian Phytopath.* 60 (1): 79- 82.
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#### **PUBLICATIONS ( 2009-10)**

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24. Janki Kandhari and Lal,M. 2009. Cultural and morphological variability in *Rhizoctonia solani* isolates causing sheath blight of rice. *Mycol Pl. Pathol.* 39(1):77-81.
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## Financial Statement

### Expenditure under CAFT during XI plan

Head	2007-08	2008-09	2009-10	2010-11	2011-12(As on 10-10-2011)
Operating cost of Training	3,27,657.00	3,36,651.00	--	4,60,337.00	2,65,000.00
Recurring Contingency	1,67,625.00	1,34,426.00	86,891.00	1,74,809.00	14,103.00
Non-Recurring Contingency T.A.	24,072.00	3,801.00	20,000.00	(-)1,400.00*	20,000.00
Library	48,887.00	38,696.00	11,895.00	6,100.00	6,641.00
	5,68,241.00	5,13,574.00	1,18,786.00	6,39,846.00	3,05,744.00

\*Unspent balance refunded and deposited in the account