

M NARAYANA BHAT

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Education

Ph.D Plant Pathology, Tamil Nadu Agricultural University, Coimbatore, T Nadu, 1991
M.Sc. (Agri) Plant Pathology, University of Agricultural science, Dharwad, Karnataka, 1988

Appointments

2009-Present Principal Scientist, Plant Pathology, National Centre for Integrated Pest Management, New Delhi
2002-2009 Senior Scientist, Plant Pathology, Central Potato Research Station (CPRS), Modipuram, Meerut, UP
1999-2002 Scientist (Plant Pathology), Senior scale, ICAR complex for NEH Region, Tadong, Gangtok, Sikkim
1995-1999 Scientist (Plant Pathology), ICAR complex for NEH Region, Umiam, Meghalaya
1994-1995 Training Associate (Plant Pathology), Central Plantation Crops Research Institute (CPCRI), Kasaragod, Kerala

Technologies / Concept Developed

- Oyster mushroom cultivation technology for Meghalaya
- Management of frenchbean rust and angular leaf spot; powdery mildew and rust of pea; potato late blight and heartleaf rot disease complex of banana through fungicides and neem formulation
- Identified frenchbean accessions resistant to leaf and pod rust.
- Recorded foliar fungal pathogens associated with different farming systems in Umiam, Meghalaya
- Developed Decision Support System (DSS) models for potato late blight management
- Developed Integrated Disease Management (IDM) package against black scurf of potato
- Studied late blight profile and *P infestans* variability using biological markers
- Identified effective botanicals against *P aphanidermatum*, *P infestans* and *R solani*
- Member of the team which developed Kufri Girdhari, a late blight resistant potato hybrid for hills
- Developed a comprehensive, quick and reliable method for roving survey for late blight of potato and yield loss assessment
- Developed a comprehensive Integrated Disease Management (IDM) package against late blight of potato
- Identified inorganic salts against *Fusarium* and *Rhizoctonia* infecting potato
- Developed Integrated Pest Management Technology for bell pepper in a Farmer's participatory Mode

Grants:

- **Co-PI**, Integrated development of vegetables including root and tuber crops on disease forecasting system for potato, 2002-2005, ₹ 7.0 lakhs, NHRDF, Nashik
- **Co-PI**, Evaluation, characterization and formulation development of botanicals for the management of fungal diseases and sprouting in potato, 2005-2008, ₹ 21 lakhs, ICAR
- **Co-PI**, Value Chain on potato & potato products, 2008-2012, ₹ 5.88 Crores, NAIP

- **Associate**, Engineering late blight resistance in commercial Indian potato cultivars-ABSP-II, 2006-2009, University of Wisconsin, USA and CPRI, Shimla
- **Co-PI**, Network project on *Phytophthora* and wilt diseases of field and horticultural crops, 2007- 2009, ₹ 3.18 crores, ICAR
- **Co-PI**, Demonstration, promotion and popularisation of Adaptable IPM Technology in Tomato and Bell pepper (Solanaceous vegetable crops) in a Farmers' Participatory Approach'', ₹ 9.20 lakhs, NHB Project
- **Associate**, Pest dynamics in relation to climate change (NICRA), ₹ 546 lakhs, ICAR

Publications:

Research articles: 64; Popular articles: 6; Bulletin: 3; Book chapter: 5

Selected publications

1. **Narayana Bhat M.**, Singh A K and Medhi R P 1998. Reaction of frenchbean (*Phaseolus vulgaris* L.) cultivars/accessions to rust pathogen *Uromyces appendiculatus*. *Indian J. Agri. Sci.*69: 849-850
2. **Narayana Bhat M.**, Sangit Kumar., Singh A K and Satish Chandra 1998. Management of heartleaf rot disease complex of banana. *Pestology* 23:17-19
3. **Narayana Bhat M** and B K Shukla 2001. Evaluation of some leaf extracts against *Pythium aphanidermatum* in vitro and pot culture. *Indian Phytopath.*54:395-397
4. **Narayana Bhat M** 2000. In vitro evaluation of some leaf extracts against *Pythium* spp. causing soft rot of ginger in Sikkim. *Pl. Dis. Res.* 15:97-100
5. Singh, A. K and **Narayana Bhat M** 2002. Control of frenchbean rust through fungicides and a neem based formulation. *Indian Phytopath.*55: 241-243
6. **Narayana Bhat M** 2002. Chemical control of rust and angular leaf spot of frenchbean in Sikkim. *Pl. Dis. Res.*17: 90-92.
7. **Narayana Bhat M** 2001. In vitro evaluation of some leaf extracts against *Fusarium* spp. causing yellows of ginger in Sikkim. *Pl. Dis. Res.* 16:259-262.
8. **Narayana Bhat M** and L S Srivastava. 2003. In vitro evaluation of some selected fungicides and neem formulations against six soil borne pathogens and *Trichoderma* spp. *Pl. Dis. Res.* 18: 56-59.
9. Singh, B P., **Narayana Bhat M.**, P H Singh and S M Paul Khurana 2003. Standardization of sampling techniques for estimation of field resistance components in potato against late blight. *Pl. Dis.Res.* 18:183-186.
10. Rana D K., Singh B P., **M Narayana Bhat** and Singh P H. 2003. Effect of soil moisture regimes on the viability of oospores of *P.infestans* in the sub-tropical plains. *JIPA* 30: 145-146.
11. **Narayana Bhat, M.**, Anju Rani, D. K. Rana and B. P. Singh. 2005. Fungicide equivalence of resistance in cultivar Kufri Sutlej under west-central plains. *Potato J.* 32: 191-192
12. Rajpal Singh, S M Paul Khurana, B P Singh and **M Narayana Bhat.** 2005. Integrated management schedule for control of black scurf disease of potato caused by *Rhizoctonia solani*. *Potato J.* 32: 181-182.
13. Singh, P.H., B.P.Singh and **M Narayana Bhat.** 2005. Mating types, metalaxyl resistance and racial complexity in *Phytophthora infestans* population-present scenario. *Potato J.* 32: 177-178.
14. Khem Raj Sharma, Vikas Gupta, Anju Rani, **M. Narayana Bhat** and B. P. Singh. 2006. Efficacy of inorganic salts on potato dry rot pathogen *Fusarium solani*. *J.Mycol. Plant Pathol.* 36:343-344
15. Nishant Kumar, Shiv Mohan Singh, Anju Rani, **M. Narayana Bhat** and B. P. Singh. 2006. Effect of inorganic salts on in vitro growth and germination of *Fusarium oxysporum*, the incitant of potato wilt. *Plant Dis, Res.* 21: 210-212

16. Anju Rani, **M Narayana Bhat**, B P Singh, P H Singh and D K Rana. 2007. Late blight scenario in western Uttar Pradesh and characterization of *Phytophthora infestans* population using biological markers. *Potato J.*34: 77-78
17. **Narayana Bhat, M** Anju Rani and B P Singh. 2007. Efficacy of inorganic salts against potato late blight. *Potato J.* 34: 81-82
18. Anju Rani, **M Narayana Bhat**, and B P Singh. 2007. Prophylactic and curative effect of fungicides on *Phytophthora infestans*. *J.Mycol. Plant Pathol* 37: 276-279
19. Anju Rani, **M Narayana Bhat** and B P Singh. 2007. Effect of potato phylloplane fungi on potato late blight pathogen *Phytophthora infestans*. *J.Mycol. Plant Pathol.* 37: 413-417
20. Anju Rani, **M Narayana Bhat**, and B P Singh. 2007. Effect of fungicides on growth and germination of zoospore and zoospores of *Phytophthora infestans*. *J.Mycol. Plant Pathol* 37: 527-529
21. **Narayana Bhat M**, Anju Rani and B P Singh. 2009. Influence of barrier crop on late blight (*Phytophthora infestans*) of potato in western Uttar Pradesh. *J Mycol. Plant Pathol.* 39: 70-73
22. **Narayana Bhat M**, Parul Tyagi and B P Singh. 2009. Efficacy of translaminar fungicides against late blight of potato in subtropical plains of India. *J Mycol. Plant Pathol* 39: 107-109.
23. **Narayana Bhat M**, Parul Tyagi and B P Singh. 2009. Effect of azoxystrobin-a strobilurin fungicide against late blight of potato. *J Mycol.Plant Pathol* 39: 110-113.
24. **Narayana Bhat M**, B P Singh, R K Arora, R P Rai, I D Garg and S P. Trehan. 2010. Assessment of crop losses in potato due to late blight disease during 2006-2007. *Potato J.* 37: 37-43
25. **Narayana Bhat, M**, B P Singh and P H Singh. 2010. Impact of using metalaxyl based fungicides against late blight of potato. *Potato J.* 37: 71-72
26. Sardana, H.R., **M N Bhat** and Mukesh Sehgal. 2012. Wider area and economic analysis of adaptable IPM technology in bell pepper (*Capsicum annum*). *Indian J Agri. Sci.* 82: 186-189

Honors:

- UAS Merit Scholarship, MSc (Plant pathology), UAS Dharwad, Karnataka
- ICAR junior Fellowship, MSc (Plant Pathology), UAS, Dharwad, Karnataka
- ICFRE, Senior Fellowship, Ph.D (Plant Pathology)
- Dr. K Ramakrishnan Gold medal for the best Ph. D student in Plant Pathology
- Nathaniel Gold medal for the best Ph. D thesis in plant protection including weed control;
- Dr. A N Puri prize for the best Ph D student in Plant Pathology
- Councillor, Region IV, Indian Potato Association, Shimla, 2004

Professional activities

- Guided one Ph.D student and mentioned 15 students for dissertation(project work)MSc
- Developed audio- visual programme on potato late blight
- Invited by Frito Lay India to find out late blight situation in Karnataka and Maharashtra during 2006- 2007
- Prepared a manual on “Good Agricultural Practices” (GAP) for the management of late blight and other potato diseases- to benefit the farmers of Tripura, Maharashtra and Karnataka
- Successfully tested fungicides against late blight of potato under consultancy project
- Carried out popularisation of technology on management of stem bleeding of coconut, *kole roga* of arecanut-, bud rot of coconut and Integrated Disease Management (IDM) for late blight of potato
- Co-ordinated training to scientists of Bangladesh in the field of late blight of potato under ABSP II
- Conducted several trainings on potato late blight management to farmers and entrepreneurs
- Monitored fungicide resistance against *P infestans* in temperate highlands, North eastern hills and subtropical plains of India

- *Phone in Programme* on management of late blight of potato in AIR, Delhi

Membership of Professional Societies:

- Life member, Indian Potato Association, Shimla.
- Life member, Indian Phytopathological Society (IPS), New Delhi.
- Life member, Indian Mushroom Society of India, NRC, Mushroom Chambaghat, H.P.
- Life member, Indian Society of Plant Pathologists, PAU, Ludhiana, Punjab.
- Life member, Indian Society for Spices, IISR, Calicut, Kerala.
- Life member, Adike Patrike, Puttur, Karnataka.
- Life member, Indian Society of Mycology and Plant Pathology (ISMPP), Udaipur, Rajasthan
- Annual member, Entomological Society of India-N Delhi

On going projects:

- Management of chilli wilt (PI)
- Demonstration, promotion and popularisation of Adaptable IPM Technology in Tomato and Bell pepper (Solanaceous vegetable crops) in a Farmers' Participatory Approach'' (Co-PI) (NHB Project)
- Validation and popularisation of deliverable IPM technology for Bulb vegetable crops (Onion) -Co-PI
- Pest dynamics in relation to climate change (NICRA) - Associate (Tomato)
- Development of expert system for pest management in selected vegetable crops (Brinjal and tomato) – co-PI
- Pest management delivery system for vegetable crops- Co-PI