

Brief Resume of Dr. Naveenkumar B. Patil

Dr. Naveenkumar B. Patil

Senior Scientist

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Born: 18.07.1982



Research Specialization

I am working as Senior Scientist in ICAR- **Mahatma Gandhi Integrated Farming Research Institute, Motihari (Bihar)**. My research specialization is Agriculture Entomology with emphasis on Biological control, Biopesticides, Stored grain pest management and Integrated Pest management.

Academic Background

Degree	University/Institution	Year	Distinction, if any
B.Sc. (Agri)	University of Agricultural Science (UAS), Dharwad, Karnataka	2005	First class (82.50 %)
M. Sc. (Agri) (Agricultural Entomology)	University of Agricultural Science (UAS), Dharwad, Karnataka	2007	First class (84.80 %)
Ph. D. (Agricultural Entomology)	University of Agricultural Science (UAS), Raichur, Karnataka	2014	Distinction (91.10 %)

Professional Service Experience

Sl. No.	Positions held	Name of the institute	Period of appointment
1	Scientist (On Probation)	ICAR- National Academy of Agricultural Research Management (NAARM), Hyderabad	1 st Jan., 2015 to 31 st March 2015
2	Scientist (Agricultural Entomology)	ICAR- Central Rice Research Institute, Cuttack, Odisha	10 th April, 2015 to 6 th May, 2025
3	Senior Scientist (Agricultural Entomology)	ICAR- Mahatma Gandhi Integrated Farming Research Institute (MGIFRI), Motihari, Bihar	8 th May, 2025 to Till date

Awards, Honours & Recognitions

Sl no	Award type	Events	Year	Location
1	Best Paper/ Poster Presentation	Best Poster award at 3rd ARRW International Symposium- 2018	2018	ICAR-NRRI,Cuttack
2	Best Paper/ Poster Presentation	Second Best Oral Presentation award at 17 th AZRA International Conference- 2020	2020	UAS, Raichur (Karnataka)
3	Best Paper/Poster Presentation	First Best Oral Presentation award at ARRW Diamond Jubilee National Symposium- 2021	2021	ICAR-NRRI,Cuttack
4	Best Paper/Poster Presentation	Second Best Oral Presentation award at ARRW Diamond Jubilee National Symposium- 2021	2021	ICAR-NRRI,Cuttack
5	Best Paper/Poster Presentation	Best Oral Presentation award at National Conference on System of Crop Intensification for Climate-Smart, Water and Nutrient-Efficient Agriculture 2025	2025	ICAR-IIWM, Bhubaneshwar

Publications

Research papers (Ten important research papers):

Bibhab Mahapatra, Totan Adak*, **Naveenkumar B. Patil**, Guru P. Pandi G, G. Basana Gowda, N.N. Jambhulkar, Manoj Kumar Yadav, P. Panneerselvam, Upendra Kumar, Sushmita Munda, Mayabini Jena, (2017). Imidacloprid application changes microbial dynamics and enzymes in rice soil. *Ecotoxicology and Environmental Safety*. 144: 123–130. <http://dx.doi.org/10.1016/j.ecoenv.2017.06.013> (NAAS rating 12.80).

Guru-Pirasanna-Pandi, G.*, Adak, T., Gowda, B., **Patil, N.**, Annamalai, M. and Jena, M., (2018). Toxicological effect of underutilized plant, *Cleistanthus collinus* leaf extracts against two major stored grain pests, the rice weevil, *Sitophilus oryzae* and red flour beetle, *Tribolium castaneum*. *Ecotoxicology and environmental safety*, 154, pp.92-99. <https://doi.org/10.1016/j.ecoenv.2018.02.024> (NAAS rating 12.80).

Sahu M, Adak T*, **Patil NB**, Pandi, GPG, Basana Gowda G, Yadav MK, Annamalai M, Golive P, Rath PC, Jena M., (2019), Dissipation of chlorantraniliprole in contrasting soils and its effect on soil microbes and enzymes. *Ecotoxicology and Environmental Safety*, 180: 288-294. <https://doi.org/10.1016/j.ecoenv.2019.05.024> (NAAS rating 12.80).

Pandey N, Rana D, Chandrakar G, Basana Gowda G, **Patil NB**, Govindharaj GPP, Annamalai M, Pokhare SS, Rath PC, Adak T*, (2020), Role of climate change variables (standing water and rainfall) on the dissipation of chlorantraniliprole from a simulated rice ecosystem. *Ecotoxicology and Environmental Safety*, 205: 111324. <https://doi.org/10.1016/j.ecoenv.2020.111324> (NAAS rating 12.80).

Adak T*, Mahapatra B, Swain H, **Patil NB**, GP Pandi, Basana Gowda G, Annamalai M, Pokhare SS, Sankari Meena K, Rath PC, Jena M., (2020), Indigenous biobed to limit point source pollution of imidacloprid in tropical countries. *Journal of Environmental Management*, 272: 111084. <https://doi.org/10.1016/j.jenvman.2020.111084> (NAAS rating 14.70).

Adak, T.*, Barik, N., **Patil, N.B.**, Gadratagi, B.G., Annamalai, M., Mukherjee, A.K. and Rath, P.C., (2020). Nanoemulsion of eucalyptus oil: An alternative to synthetic pesticides against two major storage insects (*Sitophilus oryzae* (L.) and *Tribolium castaneum* (Herbst)) of rice. *Industrial*

crops and products, 143, p.111849. <https://doi.org/10.1016/j.indcrop.2019.111849> (NAAS rating 11.90).

GPP Govindharaj*, Basana Gowda G, Sendhil R, Adak T, Raghu S, **Patil NB**, Mahendiran A, Rath PC, Kumar GAK, Damalas CA, (2021), Determinants of rice farmers' intention to use pesticides in eastern India: Application of an extended version of the planned behavior theory. Sustainable Production and Consumption. 26: 814–823. <https://doi.org/10.1016/j.spc.2020.12.036> (NAAS rating 18.10).

Mishra PP, Mishra PR, Adak T, Gowda BG, Pandi GPG, Golive P, Rath PC, Das SK, **Patil NB***, (2024). Vitex negundo L. oil nanoemulsion for the ecofriendly management of *Sitophilus oryzae* (L.) and *Tribolium castaneum* (Herbst) in stored rice. Plant Science Today.11(2): 341–352. <https://doi.org/10.14719/pst.3391>(NAAS rating 6.90).

Mishra, P.P., Mishra, P.R., Adak, T., Golive, P., Rath, P.C., Das, S.K. and **Patil, N.B*.**, (2024). Biototoxicity and repellency of *Vitex negundo* (L.) oil nanoemulsion towards *Rhizopertha dominica* (F.) on stored rice. Plant Science Today. 11(2): 478–485. <https://doi.org/10.14719/pst.3477>(NAAS rating 6.90).

Kar, Abhijit, Sonali Deole, Rakesh Ranjan Nayak, Akhilesh Kumar Gupta, Basana Gowda Gadratagi, **Naveenkumar Patil**, Govindharaj Guru-Pirasanna-Pandi, Bibhab Mahapatra, Arabinda Mahanty, and Totan Adak*, (2024). Distribution and risk assessment of pesticide pollution in small streams adjoining paddy fields. Journal of Hazardous Materials, 469 (2024): 133852. <https://doi.org/10.1016/j.jhazmat.2024.133852> (NAAS rating 19.60).

Research papers (Others):

Naveenkumar B Patil*, Basana Gowda G, Totan Adak, Guru Pirasanna Pandi G, Mahendiran Annamalai, P C Rath and Mayabini Jena, (2022), Repellency of Plant Essential Oils to Key Coleopteran Stored Grain Insects of Rice. Indian Journal of Entomology 84(3): 567-572. <https://doi.org/10.55446/IJE.2021.13>. (NAAS rating 5.59).

Naveenkumar B Patil*, Aparna Baruah, Totan Adak, Basana Gowda G, Guru Pirasanna Pandi G, Mahendiran Annamalai, Raghu S and PC Rath, (2023), A novel insecticide seed treatment formulation (Chlorantraniliprole 625 g/ L FS) for yellow stem borer and leaf folder management in rice. *Oryza*, 60 (1): 159-165. <https://doi.org/10.35709/ory.2023.60.1.7> (NAAS rating 5.08).

Behera SK, Shaw SS, Rath PC, Adak T, Basana Gowda G, Pandi GPP, Annamalai M, Pati P, Mandol, L, **Patil NB***, (2023), Toxicity and resistance levels of phosphine against *Tribolium castaneum* (Herbst) and *Sitophilus oryzae* (L.) populations. *Oryza*, 60 (2): 287-296. <https://doi.org/10.35709/ory.2023.60.2.6> (NAAS rating 5.08).

Priyadarshini, K., Sah, R.P., Adak, T., Pandi, G.G.P., Azharuddin, T.M., Anilkumar, C., Mohapatra, S.D., Gowda, G.B. and **Patil, N.B.***, (2024). cgSSR marker based trait associations for *Sitotroga cerealella* (Olivier) resistance in stored paddy rice. Journal of Stored Products Research, 107, p.102340. <https://doi.org/10.1016/j.jspr.2024.102340> (NAAS rating 8.70).

Pattanaik, Kali Prasad, Arabinda Mahanty, Nilaya Kumar Panda, Patipiti Bhavana, Basana Gowda G, **Naveenkumar Patil**, Govindharaj Guru-Pirasanna-Pandi, Prasanthi Golive, Mahendiran Annamalai, and Totan Adak* (2024). Pre-alighting and Post-alighting Volatile Organic Compounds Emitted by Rice Influence the Behavior of *Scirpophaga incertulas*. *Journal of Agricultural and Food Chemistry*, 72 (42): 23151-23159. <https://doi.org/10.1021/acs.jafc.4c05638> (NAAS rating 12.10).

Govindharaj GPP*, Jena M, Annamalai, G. Basana-Gowda, Muthiah C, **Patil N**, Rath PC, Adak T, (2022), Toxicity of water pepper, *Persicaria hydropiper* (L.) extracts against *Nilaparvata lugens* (Stål) and non-targeted effect on earthworm. Industrial Crops and Products, 187: 115309. <https://doi.org/10.1016/j.indcrop.2022.115309> (NAAS rating 11.90).

- Mishra R, Mishra HP, Pradhan SS, Pandi GP, Basana Gowda G, **Patil NB**, Annamalai M, Rath PC, Adak T*, (2022), Residue dynamics and bio-efficacy of triflumezopyrim against *Nilaparvata lugens* and non-targeted effect on natural enemies in a rice ecosystem. *Environmental Science and Pollution Research*, 29(20):30206-30216. <https://doi.org/10.1007/s11356-022-18551-1>(NAAS rating 11.80).
- Kar, A., Deole, S., Gadratagi, B.G., **Patil, N.**, Guru-Pirasanna-Pandi, G., Mahapatra, B. and Adak, T*., (2023). Facile synthesis of novel magnesium oxide nanoparticles for pesticide sorption from water. *Environmental Science and Pollution Research*, 30(45), pp.101467-101482. [DOI: 10.1007/s11356-023-29562-x](https://doi.org/10.1007/s11356-023-29562-x) (NAAS rating 11.80).
- Govindharaj, G.P.P.*, Annamalai, M., Choudhary, J.S., Khan, R.M., Basana-Gowda, G., **Patil, N.**, Panda, R.M., Srivastava, K. and Mohapatra, S.D., (2024). Significant variations of bacterial communities among the developmental stages of *Scirpophaga incertulas* (Walker) (Lepidoptera: Crambidae). *Scientific Reports*, 15(1),p.8552. <https://doi.org/10.1038/s41598-025-93048-8> (NAAS rating 10.60).
- G. Basana Gowda*, Sahu M, Ullah F, **Patil NB**, Govindharaj GPP, Adak T, Pokhare S, Mahendiran A, Rath PC, (2021), Insecticide-induced hormesis in a factitious host, *Corcyra cephalonica*, stimulates the development of its gregarious ecto-parasitoid, *Habrobracon hebetor*. *Biological Control*, 160: 104680. <https://doi.org/10.1016/j.biocontrol.2021.104680> (NAAS rating 10.20).
- Ray A, Gadratagi BG*, Budhlakoti N, Rana DK, Adak T, Govindharaj GPP, **Patil NB**, Mahendiran A, Rath PC, (2023), Functional response of an egg parasitoid, *Trichogramma chilonis* Ishii to sublethal imidacloprid exposure. *Pest management science*. <https://doi.org/10.1002/ps.7540> (NAAS rating 10.10).
- Nath A, Gadratagi BG*, Maurya RP, Ullah F, **Patil NB**, Adak T, Govindharaj GPP, Ray A, Mahendiran A, Desneux N, Rath PC, (2023), Sublethal phosphine fumigation induces transgenerational hormesis in a factitious host, *Corcyra cephalonica*. *Pest management science*. <https://doi.org/10.1002/ps.7542> (NAAS rating 10.10).
- Basana Gowda G*, Govindharaj GPP, Ullah F, **Patil NB**, Sahu M, Adak T, Pokhare S, Yadav MK, Annamalai M, Mittapelly P, Desneux N, Rath PC, (2021), Performance of *Trichogramma japonicum* under field conditions as a function of the factitious host species used for mass rearing. *PLoS ONE* 16(8): e0256246. <https://doi.org/10.1371/journal.pone.0256246> (NAAS rating 9.70).
- Ray A, Gadratagi BG*, Rana DK, Ullah F, Adak T, Govindharaj GPP, **Patil NB**, Mahendiran A, Desneux N, Rath PC, (2022), Multigenerational Insecticide Hormesis Enhances Fitness Traits in a Key Egg Parasitoid, *Trichogramma chilonis* Ishii. *Agronomy*, 12(6):1392. <https://doi.org/10.3390/agronomy12061392> (NAAS rating 9.70).
- Annamalai M*, Pandi GGP, Chellapandiyam M, Adak T, Basana-Gowda G, **Patil N**, Rath PC, Senthil-Nathan S, (2022), Silica Amendment Enhances Resistance of Rice to Yellow Stem Borer *Scirpophaga incertulas* (Walker) with no Detrimental Effect on Non-target Organism *Eisenia fetida* (Savigny). *Silicon*, 14: 11939–11949. <https://doi.org/10.1007/s12633-022-01897-z> (NAAS rating 9.40).
- Arora, Sumitra*, **Naveenkumar Patil**, Totan Adak, J. Stanley, Mayabini Jena, Falguni Patel, and Montu Patel. (2023): Phosphine estimation in fumigated food grains using gas chromatography equipped with FPD detector. *Environmental Monitoring and Assessment* 195 (9):1-12. <https://doi.org/10.1007/s10661-023-11645-4> (NAAS rating 9.00).
- Mishra T, Govindharaj GPP, Basana Gowda G, **Patil NB**, Yadav MK, Munda S, Mukherjee AK, Jena M, Adak T*, (2019), Deciphering the associated risk on soil microbes upon use of biopesticides in rice ecosystem. *Environmental Monitoring and Assessment* 191: 654. <https://doi.org/10.1007/s10661-019-7823-3> (NAAS rating 9.00).
- Anant AK, GPP Govindharaj*, Jena M, Chandrakar G, Parameshwaran C, Raghu S, Basana Gowda G, Annamalai M, **Patil NB**, Adak T, Naveenkumar R, Rath PC, (2022), Genetic dissection and

identification of candidate genes for brown planthopper, *Nilaparvata lugens* (Delphacidae: Hemiptera) resistance in farmers' varieties of rice in Odisha. Crop Protection, 144: 105600. <https://doi.org/10.1016/j.cropro.2021.105600> (NAAS rating 8.80).

Mahapatra B, Adak T*, **Patil NB**, Pandi GPG, Basana Gowda G, Yadav MK, Mohapatra SD, Rath PC, Munda S, Jena M, (2017), Effect of Abiotic Factors on Degradation of Imidacloprid. Bulletin of Environmental Contamination and Toxicology. 99(4): 475-480. <https://doi.org/10.1007/s00128-017-2159-6> (NAAS rating 8.70).

Renuka VVL, Adak T*, Nayak RR, **Patil NB**, Sanghamitra P, Mahapatra B, Govindharaj GPP, Basana Gowda G, Annamalai M, Pokhare SS, Rath PC, (2023), Natural colours could be used as dye to identify *Tribolium castaneum* (Herbst) eggs. Journal of Stored Products Research, 101: 102084, <https://doi.org/10.1016/j.jspr.2023.102084> (NAAS rating 8.70).

Products & patents

Insect pest management technologies /products developed	Publication source/ Journal name
ICT tools developed ➤ Mobile apps riceXpert and csaXpert, ➤ Databases for WBPH, Root knot nematode phenotyping	ICAR-CRRI, Website
➤ Efficacy of Aluminum phosphide formulations tested in FCI godown against important stored grain pests of rice	Environmental monitoring and assessment
➤ Nanoemulsion formulation of Eucalyptus oil for storage pests management in rice	Industrial crops & products
➤ Efficient plant essential oils identified for eco-friendly storage pests management	Indian Journal of Entomology
➤ Stored grain insect pests of rice emphasizing IPM (Technical bulletin published)	ICAR-CRRI, Website
Biocontrol agent products for rice pest management ➤ Tricho cards (<i>Trichogramma chilonis</i> , <i>Trichogramma japonicum</i>) for managing YSB and leaf folder. ➤ Bracon cards (<i>Bracon hebator</i>) for managing YSB and leaf folder	ICAR Krishi portal
➤ Rice variety developed CR Dhan 410 (Mahamani), which is resistant to YSB and leaf folder	Notified by SVRC, Odisha
➤ One patent granted on 12.12.2023 for "Efficient portable insect collector with automated counter"	Patent Office, GOI

Book chapters:

RK Sahu, RP Sah, P Sanghamitra, RL Verma, **NKB Patil**, M Jena, AK Mukherjee, MK Bag and ON Singh (2018). Quality Seed Production and Maintenance Breeding for Enhancing Rice Yield Pp 37-51. In: Pathak H, Nayak AK, Jena M, Singh ON, Samal P, Sharma SG (Ed.) Rice Research for Enhancing Productivity, Profitability and Climate Resilience. ICAR-National Rice Research Institute, Cuttack 753006, Odisha, India, p x+542. **ISBN: 81-88409-04-09.**

Mayabini Jena, PC Rath, AK Mukherjee, Raghu S, GP Pandi G, Basana Gowda G, Prasanthi G, MK Yadav, MS Baite, Prabhukarthikeyan SR, MK Bag, Srikant Lenka, Arvandan S, **Naveen Kumar Patil**, SD Mohapatra, Annamalai M and T Adak (2018). Exploring New Sources of Resistance for Insect Pest and Diseases of Rice. Pp 369-383. In: Pathak H, Nayak AK, Jena M, Singh ON, Samal P, Sharma SG (Ed.) Rice Research for Enhancing Productivity, Profitability and Climate Resilience. ICAR-National Rice Research Institute, Cuttack 753006, Odisha, India, p x+542. **ISBN: 81-88409-04-09.**

SD Mohapatra, Raghu S, Prasanthi G, MS Baite, Prabhukarthikeyan SR, MK Yadav, Basana Gowda G, Guru P Pandi G, A Banerjee, **NB Patil**, S Chatterjee, S Lenka, K Rajsekhar Rao, AK Mukherjee, MK Bag, PC Rath and M Jena (2018). Bio-ecology of rice insect pests and diseases for climate-smart rice protection. Pp 384-403. In: Pathak H, Nayak AK, Jena M, Singh ON, Samal P, Sharma SG (Ed.) Rice Research for Enhancing Productivity, Profitability and Climate Resilience. ICAR-National Rice Research Institute, Cuttack 753006, Odisha, India, p x+542. **ISBN: 81-88409-04-09.**

AK Mukherjee, MK Bag, M Annamalai, T Adak, S Lenka, Basanagowda G, Prasanthi G, Raghu S, M Baite, Prabhukarthikeyan SR, **NB Patil**, PC Rath, Guru Prasanna Pandi G, SRR Korada, Nabaneeta Basak, U Kumar, SD Mohapatra, S Bhagat, Amrita Banerjee, R Bhagawati and M Jena (2018) Bio-intensive Management of Pest and Diseases of Rice. Pp 404-418. In: Pathak H, Nayak AK, Jena M, Singh ON, Samal P, Sharma SG (Ed.) Rice Research for Enhancing Productivity, Profitability and Climate Resilience. ICAR-National Rice Research Institute, Cuttack 753006, Odisha, India, p x+542. **ISBN: 81-88409-04-09.**

PC Rath, T Adak, M Jena, MK Bag, Raghu S, Annamalai M, MS Baite, **Naveenkumar B Patil**, Prasanthi G, U Kumar, P Panneerselvam, GP Pandi G, S Lenka, Basanagowda G, SD Mohapatra, AK Mukherjee, Arvindan S, MK Yadav and Prabhukarthikeyan SR (2018) Optimization of chemical pesticide use in rice. Pp 419-436. In: Pathak H, Nayak AK, Jena M, Singh ON, Samal P, Sharma SG (Ed.) Rice Research for Enhancing Productivity, Profitability and Climate Resilience. ICAR-National Rice Research Institute, Cuttack 753006, Odisha, India, p x+542. **ISBN: 81-88409-04-09.**

Basana-Gowda G*, Ray A, Sahu M, Sahu N, Patil NB, GP Pandi G, Adak T, Mahendiran A and Srinivasa N, Rath PC (2022) Biological control in rice using *Trichogramma* spp. and *Habrobracon hebetor*: Implications of their quality. In: Climate Resilient Technologies for Rice based Production Systems in Eastern India. ICAR-National Rice Research Institute, Cuttack, Odisha, India. Pp 281-293.

Rath PC, Bag MK, Patil NB, Raghu S, Prabhukarthikeyan SR, Banerjee A, Basana-Gowda G, Pandi GPG, Annamalai M, Prashanthi G (2022) Screening, identification and cataloguing of rice genotypes for resistance to major pests and diseases. In: Climate Resilient Technologies for Rice based Production Systems in Eastern India. ICAR-National Rice Research Institute, Cuttack, Odisha, India. Pp 294-321.

Patil NB*, Behera S, Adak T, Gowda BG, Govindharaj GPP, Annamalai M, Raghu S, Prasanthi G and Rath PC (2022) Integrated Approaches for Managing Stored Grain Insect Pests of Rice. In: Climate Resilient Technologies for Rice based Production Systems in Eastern India. ICAR-National Rice Research Institute, Cuttack, Odisha, India. Pp 321-339.

Ray A, Basana Gowda G*, NB Patil, GP Pandi, Adak T, Pradhan H, Narayana S, and Rath PC (2022) Advances in Insect Resistance Breeding against Brown Planthopper and Gall Midge in Rice. In: Genetic Methods and Tools for Managing Crop Pests (Ed. A. K. Chakravarthy). Springer Nature Singapore, 641-654. https://doi.org/10.1007/978-981-19-0264-2_27
