

Brief Biodata

1. Name and full correspondence address : **Dr. BABASAHEB B. FAND**
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3. Institution : ICAR-Central Institute for Cotton Research,
Nagpur, Maharashtra, India
4. Date of Birth : 25/02/1984
5. Gender (M/F/T) : M
6. Category (Gen/ SC/ST/OBC) : Gen
7. Whether differently abled (Yes/No) : No
8. Academic qualifications (Undergraduate onwards)

S. No.	Degree	Year	Subjects	University	% marks / OGPA	Remarks
i.	B.Sc.	2005	Agriculture	Mahatma Phule Krishi Vidyapeeth, Rahuri, Ahmednagar, Maharashtra, India	8.72*	1 st Distinction
ii.	M.Sc.	2007	Agricultural Entomology	Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra, India	9.16	1 st Distinction Gold Medal
iii.	Ph.D.	2010	Entomology	Indian Agricultural Research Institute, New Delhi, India	8.71	1 st , Gold Medal

* Overall grade point average on 10.0 point scale

9. Ph.D thesis title, Guide's Name, Institute/Organization/University, Year of Award.

Ph.D. thesis title	Guide's Name	Institute/ Organization/ University	Year of Award
Ecological studies on mealybug, <i>Phenacoccus solenopsis</i> Tinsley (Hemiptera: Pseudococcidae), selected Coccinellids and an Encyrtid parasitoid	Dr. R.D. Gautam Professor Division of Entomology ICAR-IARI, New Delhi	ICAR-Indian Agricultural Research Institute, Pusa Campus, New Delhi 110 012, India	2010

10. Work experience (in chronological order).

S. No.	Position held	Name of the institute	From	To	Pay scale
1	Scientist	ICAR-National Academy of Agricultural Research Management, Hyderabad, AP, India	April 20, 2010	August 17, 2010	Rs. 15,600 – 39,100/- RGP Rs. 6000/-
2	Scientist	ICAR- Central Potato Research Institute, Shimla, HP, India	August 26, 2010	October 23, 2010	Rs. 15,600 – 39,100/- RGP Rs. 6000/-
3	Scientist	ICAR-National Institute of Abiotic Stress Management, Baramati, Pune, India	October 26, 2010	April 20, 2014	Rs. 15,600 – 39,100/- RGP Rs. 6000/-
			April 20, 2014	May 19, 2016	Rs. 15,600 – 39,100/- RGP Rs. 7000/-
4	Scientist	ICAR-National Research Center for Grapes, Pune, Maharashtra, India	May 20, 2016	May 31, 2017	Rs. 15,600 – 39,100/- RGP Rs. 7000/-
5	Scientist	ICAR-Central Institute for Cotton Research, Nagpur, Maharashtra, India	June 01, 2017	Till present	Rs. 15,600 – 39,100/- RGP Rs. 7000/-

11. Professional Recognition/Award/Prize/Certificate/Fellowship received by the applicant.

Awards/Recognition by the National and International Level Professional Societies and Academies

S.N.	Name of award	Conferring agency	Awarded for	Year
1.	Early Career Researcher Award - 2020	Royal Entomological Society, London, UK	Outstanding early career contribution to entomological science	2020
2.	Young Entomologist Award-2020	Entomological Society of India, ICAR-IARI, New Delhi	Outstanding contribution to entomological science in India	2020

3.	Prof. T.N. Ananthakrishnan Foundation's "Young Scientist Award 2019-20"	Prof. T.N. Ananthakrishnan Foundation, Chennai, Tamil Nadu, India	Significant contribution to Entomology/insect pest management	2020
4.	Dr. B. Vasanthraj David Foundation's "Young Scientist Award -2019"	Dr. B. Vasanthraj David Foundation, Chennai, Tamil Nadu, India	Significant contributions in Agricultural Entomology, Forecasting and climate change, IPM Modules, Pest Management and Biological Control	2019
5.	Late R.K. Kadlag Memorial Krishi Kranti Award (Agricultural Revolution Award)	Late R.K. Kadlag Foundation, Jamkhed, District Ahmednagar, Maharashtra, India	Outstanding contribution in the field of agricultural research and dissemination of Crop protection technologies	2018

AWARDS BY ICAR, CSIR, DST, DBT, NRDC, NATIONAL SCIENCE ACADEMIES, ETC.

S.N.	Name of award	Conferring agency	Awarded for	Year
1.	Fast Track Scheme for Young Scientists (An award project with budget of Rs 17.25 Lakh for the period of three years 2013-16)	Science and Engineering Research Board, Department of Science and Technology (DST), Government of India, New Delhi	Awarded for the research project proposal "Predicting the impact of climate change on regional and seasonal abundance of major soybean insect pests using temperature-driven phenology modeling and GIS-based risk mapping approach".	2013
2.	Jawaharlal Nehru Award -2011	Indian Council of Agricultural Research (ICAR), New Delhi	Outstanding Doctoral Thesis Research in the field of Crop Protection	2011

Medals/Prizes

S.N.	Name of award	Conferring ency	Awarded for	Year
1.	Late R.K. Kadlag Memorial Krishi Kranti Award (Agricultural Revolution Award)	Late R.K. Kadlag Foundation, Jamkhed, District Ahmednagar, Maharashtra, India	Outstanding contribution in the field of agricultural research and dissemination of Crop protection technologies	2018
2.	Best Oral Research Paper Presentation Award	Entomological Research Association, Udaipur, Rajasthan, India	Presenting a paper "Predicting the daily temperature fluctuations on development, survival and reproduction in Soybean leaf eating caterpillar (<i>Spodoptera litura</i>)", in the International Conference: Changing scenario of pest	2014

			problems in agri-horti ecosystem and their management at Maharana Pratap University of Agriculture and Technology, Udaipur.	
3.	Best oral research paper presentation Award	Association for Advancement of Pest Management in Horticultural Ecosystems, IIHR, Bangalore	Presenting a paper “Modeling the impact of climate change on potential geographic distribution of mealybug <i>Phenacoccus solenopsis</i> using MAXENT and DIVA-GIS”, in National Symposium on Plant Protection in Horticultural Crops at Indian Institute of Horticultural Research, Bangalore, Karnataka, India	2012
4.	Gur Prasad Pradhan Gold Medal	Indian Agricultural Research Institute, New Delhi	Best PhD research in the field of Agricultural Entomology	2010
5.	National Seminar on Pest Management Gold Medal	Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra, India	Best Post graduate (M.Sc.) research in Agricultural Entomology	2009
6.	Late Dr. K.R. Thakare Gold medal	Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra, India	Best Post graduate (M.Sc.) research in Agricultural Entomology	2009
7.	United Phosphorous Ltd. Gold medal	Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra, India ²⁶¹	Best Post graduate (M.Sc.) research in Agricultural Entomology	2009
8.	Dr. Vishvanath Mehasare Gold medal	Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra, India	Best Post graduate (M.Sc.) research in Agricultural Entomology	2009
9.	Hexamer Agricultural Research and Development Foundation Silver Medal	Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra, India	Best Post graduate (M.Sc.) research in Agricultural Entomology	2009

Fellowships/Life fellows

S.N.	Name of fellowship	Conferring agency	Awarded for	Year
1.	Indian Agricultural Research Institute (IARI) Fellowship for Doctoral studies	Indian Agricultural Research Institute (IARI), Pusa, New Delhi	Doctoral studies/Ph.D. in Entomology	2007-2010
2.	Junior Research Fellowship (JRF) for Post Graduate studies	Indian Council of Agricultural Research (ICAR), New Delhi	Post Graduate studies/ M.Sc. in Agricultural Entomology	2005-2007
3.	Merit-cum-Means Scholarship for Under Graduate studies	Indian Council of Agricultural Research (ICAR), New Delhi	Meritorious student of B.Sc. (Agriculture)	2001-2005
4.	Life Fellow	Entomological Society of India, New Delhi, India.		2013
5.	Life Member	Society for Biocontrol Advancement, Bangalore, India		2014
6.	Life Member	Indian Science Congress, Kolkata, India		2014
7.	Life Member	Association of Agrometeorologists, Anand, Gujarat, India		2019

Positions of President, Chief Editor (or equivalent position), and Secretary

S.N.	Name of fellowship	Conferring agency	Year
1.	Consulting Editor	Journal of Environmental Biology (NAAS rating: 6.73), Triveni Enterprises, Lucknow, Uttar Pradesh, India.	2014-2015
2.	Subject Editor (Biological control)	Indian Journal of Entomology (NAAS rating 5.89)	2018 - till date
3.	Review Editor (APE Entomology)	Pantnagar Journal of Research (NAAS rating 4.6)	2019 – till date
4.	Secretary (Maharashtra Chapter)	Indian Ecological Society, PAU, Ludhiana, Punjab	2017 - till date

12. Publications (List of papers published in SCI Journals, in year wise descending order).

A. Papers published in international journals

S.N.	Details of Publications in the format given above	Impact factor*	No. of Citations
1.	Fand BB* , VS Nagrare, SK Bal, V Chinna Babu Naik, BV Naikwadi, DJ Mahule, Nandini Gokte-Narkhedkar, VN Waghmare. 2021 . Degree day based model predicts pink bollworm phenology across subtropics and semi arid tropics of India. <i>Scientific Reports</i> , 11(1): 1-18. https://doi.org/10.1038/s41598-020-80184-6	4.12	02
2.	Fand BB* , Amala U, Yadav DS, Rathi R, Mhaske SH, Upadhyay A, Shabeer ATP, Kumbhar DS. 2020 . Bacterial volatiles from mealybug honeydew exhibit kairomonal activity towards solitary endoparasitoid <i>Anagyrus dactylopii</i> . <i>Journal of Pest Science</i> . 93: 195–206	4.56	01
3.	Fand BB* , Sul NT, Bal SK, Minhas PS. 2015 . Temperature impacts the future distribution, abundance and damage potential of soybean leaf eating caterpillar (<i>Spodoptera litura</i>): simulation and visualization of potential risk in India under warmer temperatures through life cycle modelling and spatial mapping. <i>PLOS ONE</i> , 10(4): e0124682, 2015. DOI: 10.1371/journal.pone.0124682	2.78	48
4.	Fand BB* , Tonnang HEZ, Kumar M, Bal SK, Singh NP, Rao DVKN, Kamble AL, Nangare DD, Minhas PS. 2014 . Predicting the impact of climate change on regional and seasonal abundance of the mealybug <i>Phenacoccus solenopsis</i> Tinsley (Hemiptera: Pseudococcidae) using temperature-driven phenology model linked to GIS. <i>Ecological Modelling</i> , 288, 62-78	2.50	50
5.	Peddu H, Fand BB* , Sawai HR, Lave NV. 2020 . Estimation and validation of developmental thresholds and thermal requirements for cotton pink bollworm <i>Pectinophora gossypiella</i> . <i>Crop Protection</i> , 127: 104984. DOI: https://doi.org/10.1016/j.cropro.2019.104984	2.38	05
6.	Fand BB* , Suroshe SS. 2015 . The invasive mealybug <i>Phenacoccus solenopsis</i> Tinsley, a threat to tropical and subtropical agricultural and horticultural production systems: A review. <i>Crop Protection</i> , 69(C): 34-43	2.38	69
7.	Fand, BB* , Tonnang, HEZ, Kumar, M, Kamble, AL and Bal, SK. 2014 . A Temperature-based Phenology Model for Predicting Development, Survival and Population Growth Potential of the Mealybug, <i>Phenacoccus solenopsis</i> Tinsley (Hemiptera: Pseudococcidae). <i>Crop Protection</i> , 55(C): 98-108	2.38	53
8.	Fand, BB* , Gautam, RD and Suroshe, SS. 2011 . Suitability of various stages of mealybug, <i>Phenacoccus solenopsis</i> (Homoptera: Pseudococcidae) for development and survival of the solitary endoparasitoid, <i>Aenasius bambawalei</i> (Hymenoptera: Encyrtidae). <i>Biocontrol Science and Technology</i> , 21(1): 51-55, 2011	1.21	48
9.	Fand BB* , Nagrare VS, Gawande SP, Nagrale DT, Naikwadi BV, Deshmukh V, Gokte-Narkhedkar N, Waghmare VN. 2019 . Widespread infestation of pink bollworm, <i>Pectinophora gossypiella</i> (Saunders) (Lepidoptera: Gelechiidae) on Bt cotton in Central India: a new threat and concerns for cotton production. <i>Phytoparasitica</i> , 47, 313–325	1.14	13
10.	Gokte-Narkhedkar N, Bhanare K, Nawarkarkar P, Chilliveri P, Fand BB* , Kranthi, S. 2019 . Parasitic potential of entomopathogenic nematode <i>Heterorhabditis indica</i> against two Lepidopteran insect pests of cotton, <i>Helicoverpa armigera</i> (Hubner) and <i>Spodoptera litura</i> (Fabricius) <i>Phytoparasitica</i> , 47(1): 31-41	1.14	04

11.	Fand BB* , Nagrare VS, Deshmukh V, Naikwadi BV, Gokte-Narkhedkar N, Waghmare VN. 2020 . A simple and low-cost laboratory rearing technique for cotton pink bollworm, <i>Pectinophora gossypiella</i> (Suanders) (Lepidoptera: Gelechiidae) using detached green bolls of cotton. <i>Phytoparasitica</i> . https://doi.org/10.1007/s12600-019-00779-2 .	1.14	05
12.	Firake, DM, Behere, GT, Sharma, B, Fand, BB . 2015. First report of the Invasive Mealybug, <i>Phenacoccus parvus</i> Morrison Infesting Naga King Chili and its Colonization Potential on Major Host Plants in India. <i>Phytoparasitica</i> ,44(2): 187–194	1.14	04
13.	Nagrare VS, Fand BB , Naikwadi BV, Deshmukh V. 2019 . Potential risk of establishment and survival of cotton aphid <i>Aphis gossypii</i> in India based on simulation of temperature-dependent phenology model International Journal of Pest Management, DOI: 10.1080/09670874.2019.1649739	0.89	01
14.	Choudhary JS, Mali SS, Fand BB , Das B. 2019 . Predicting the invasion potential of indigenous restricted mango fruit borer, <i>Citripestis eutrappera</i> (Lepidoptera: Pyralidae) in India based on MaxEnt modelling. <i>Current Science</i> , 116(4): 636-642	0.88	04
15.	Fand, BB , Kumar, M. and Kamble, A.L. 2014 . Predicting the potential geographic distribution of cotton mealybug <i>Phenacoccus solenopsis</i> (Hemiptera: Pseudococcidae) in India based on MAXENT ecological niche Model. <i>Journal of Environmental Biology</i> , 35(5): 973-982	0.78	30
16.	Fand BB* , Gaikwad, MB, Sul, NT, Bal, SK. 2019 . Effect of seasonal weather on incidence of stem fly <i>Melanagromyza sojae</i> (Zehntner) in soybean. <i>Journal of Agrometeorology</i> , 21(4), 520-523	0.64	-
17.	Choudhary JS, Kumari M and Fand BB . 2019 . Linking insect pest models with climate change scenarios to project against future risks of agricultural insect pests. <i>CAB Reviews</i> , 14, No. 055. DOI: 10.1079/PAVSNR201914055	0.64	01
18.	Fand BB* , Shashank P, Suroshe SS, Chandrashekhar K, Meshram M, Timanna. 2020 . Invasion risk of South American tomato pinworm <i>Tuta absoluta</i> (Meyrick) (Lepidoptera: Gelechiidae) in India: predictions based on MaxEnt ecological niche modelling. <i>International Journal of Tropical Insect Science</i> . https://doi.org/10.1007/s42690-020-00103-0	0.54	01
19.	Nagrare VS, Fand BB , Naik VCB, Naikwadi B, Deshmukh V, Sinh D. 2020 . Resistance development in Cotton mealybug, <i>Phenacoccus solenopsis</i> Tinsley (Hemiptera: Pseudococcidae) to insecticides from Organophosphate, Thiadiazines and Thiourea derivatives. <i>International Journal of Tropical Insect Science</i> . DOI: 10.1007/s42690-019-00068-9	0.54	03
20.	Fand BB , Gaikwad MB, Sul NT, Kumar M, Bhagat KP, Bal SK, Minhas PS. 2018 . Population dynamics of soybean stem fly <i>Melanagromyza sojae</i> (Diptera: Agromyzidae) and its parasitoids in Maharashtra State of India. <i>International Journal of Tropical Insect Science</i> , 38(1):46-57,	0.54	06
21.	Fand, B.B. , Yadav, D.S., Mhaske, S.H. et al. Biological parameters of stem borer <i>Stromatium barbatum</i> reared on grapevine wood logs under laboratory conditions. <i>International Journal of Tropical Insect Science</i> (2021). https://doi.org/10.1007/s42690-021-00460-4	0.54	
22.	Chandi, R.S., Kataria, S.K., Fand, B.B. 2021 . Effect of temperature on biological parameters of cotton whitefly, <i>Bemisia tabaci</i> (Gennadius) (Hemiptera: Aleyrodidae). <i>International Journal of Tropical Insect Science</i> (2021). https://doi.org/10.1007/s42690-020-00397-0	0.54	-
23.	Gavkare, O., Sharma, P.L., Chandel, R.S., Fand B. B. , Nidhi Sharm. 2021 . Temperature impact on the phenology of <i>Nesidiocoris tenuis</i> feeding on <i>Tetranychus urticae</i> : simulation through life cycle modelling. <i>Int J Trop Insect Sci</i> (2021). https://doi.org/10.1007/s42690-020-00402-6	0.54	-

24.	Sureshan PM, Fand BB* , Nikhil K. 2019 . Record of six Pteromalid parasitoids from the soybean stem fly <i>Melanagromyza sojae</i> Zehntner with the description of a new species of <i>Sphegigaster</i> Spinola (Hymenoptera: Chalcidoidea) from Maharashtra, India. <i>Oriental Insects</i> , 53(1): 19-33, 2019	0.33	-
25.	Laneesha, Suroshe SS, Fand BB , Shankar Ganesh K. 2020 . The papaya mealybug, <i>Paracoccus marginatus</i> Williams and Granara de Willink (Hemiptera: Pseudococcidae): A new threat to agri-horticulture ecosystem. <i>Indian Journal of Agricultural Sciences</i> , 90 (3): 455–62	0.25	-

B. Papers published in Indian/National peer reviewed NAAS rated journals

S. No.	Author/s	Title	Journal (Vol., Issue, Year)	*NAAS Rating	Citations to the article/s
1.	Suroshe SS, Gautam RD, Fand BB	Biology of mealybug, <i>Phenacoccus solenopsis</i> tinsley on <i>Parthenium</i>	<i>Indian Journal of Entomology</i> , 78(3): 264-267, 2016	5.89	-
2.	Suroshe SS, Gautam RD, Fand BB.	Safety of insecticides against <i>Aenasius bambawalei</i> Hayat (Hymenoptera: Encyrtidae)	<i>Indian Journal of Entomology</i> , 76:224-22, 2014	5.89	6
3.	Suroshe SS, Gautam RD, Fand BB.	Natural enemy complex associated with the mealybug, <i>Phenacoccus solenopsis</i> Tinsley (Hemiptera: Pseudococcidae) infesting different host plants in India.	<i>Journal of Biological Control</i> , 27(3):204-210, 2013.	5.34	6
4.	Fand, B.B. , Gautam, R.D. and Suroshe, SS.	Fortuitous Biological Control of Insect Pests and Weeds: A Critical Review.	<i>The Bioscan</i> , 8 (1): 1-10, 2013.	5.26	14
5.	Fand, B.B. , Kamble, A.L. and Kumar, M.	Will climate change pose a serious threat to crop pest management: A critical review?	<i>Int. Journal of Sci. and Res. Publications</i> , 2(11), 1-15, 2012.		17
6.	Fand, B.B. , Gautam, R.D., Anju kamra, Suroshe, S.S. and Mohan, S,	Bioefficacy of aqueous garlic extract and a symbiotic bacterium, <i>Photorhabdus luminescens</i> against <i>Phenacoccus solenopsis</i> Tinsley (Homoptera: Pseudococcidae).	<i>Biopesticides International</i> , 8(1): 38-48, 2012	4.82	1

7.	Fand, B.B., Gautam, R.D. Subhash Chander and Suroshe, S.S.	Life table analysis of the mealybug, <i>Phenacoccus solenopsis</i> Tinsley (Hemiptera: Pseudococcidae) under laboratory conditions.	<i>Journal of Entomological Research</i> , 34(2): 175-179, 2010.	5.05	19
8.	Fand, B.B., Gautam, R.D. and Suroshe, S.S.	Effect of developmental stage and density of <i>Phenacoccus solenopsis</i> Tinsley (Hemiptera: Pseudococcidae) on the predatory performance of four coccinellid predators.	<i>Journal of Biological Control</i> , 24 (2):110-115, 2010.	5.34	13
9.	Fand, B.B., Gautam, R.D. and Suroshe, S.S.	Comparative biology of four coccinellid predators of solenopsis mealybug, <i>Phenacoccus solenopsis</i> Tinsley (Hemiptera: Pseudococcidae).	<i>Journal of Biological Control</i> , 24(1): 35-41, 2010.	5.34	10
10.	Gautam, R.D., Suroshe, S.S., Sudhida Gautam, Usha Saxena, Fand, B.B. and Trishla Gupta.	Fortuitous Biological control of exotic mealy bug, <i>Phenacoccus solenopsis</i> - A boon for Indian growers.	<i>Annals of Plant Protection Sciences</i> , 17(2): 459-526, 2009.	4.82	21
11.	Fand, B.B., Satpute, N.S., Dadmal, S.M., Bag, R.P. and Sarode, S.V.	Effect of some newer insecticides and biopesticides on parasitization and survival of <i>Trichogramma chilonis</i> Ishii.	<i>Indian Journal of Entomology</i> , 71(2): 105-109, 2009	5.89	4

13. Details of patents.

S. No.	Patent title	Name of applicant (s)	Patent no	Award date	Agency/Country	Status
-	-	-	-	-	-	-

14. Books/Reports/Chapters/General articles etc.

Books

Fand, B.B., Gautam, R.D. and Suroshe, S.S. 2012. *Biointensive management of mealybug Phenacoccus solenopsis: Methods and Approaches*. LAP Lambert Academic Publishing, Saarbrucken, Germany, 2012, 124 p.

Fand, B.B., Satpute, N.S. and Dadmal, S.M. 2012. *Compatibility of Trichogramma chilonis Ishii with chemical pesticides: Integration of biological and chemical control*. LAP Lambert Academic Publishing, Saarbrucken, Germany, 2012, 121 p.

Book Chapters

Fand, B.B., Choudhary, J.S., Kumar, M. and Bal, S.K. 2014. *Phenology modeling and GIS applications in pest management: A tool for studying and understanding insect pest dynamics in the context of global climate change*. In: Gaur, R.K. and Sharma, P. (Eds.), *Approaches to plant stresses and their management*, Springer (India) Pvt. Ltd., pp. 107-124.

Fand, B.B., Tonnang, HEZ, Bal SK and Dhawan, AK. 2018. Shift in the Manifestations of Insect Pests Under Predicted Climatic Change Scenarios: Key Challenges and Adaptation Strategies. In: Bal SK, Mukherjee J, Choudhary BU and Dhawan AK (Eds.), *Advances in crop environment interactions*, Springer Nature Singapore Pvt. Ltd., pp. 389-404.

General articles: Science newsletters/ technical reports/bulletins/ popular articles

Fand, B.B. and Nagrare, V.S. 2019. Timely terminate the cotton crop and avoid ratooning for controlling pink bollworm. *Daily Agrowon (Marathi)*, March 16, 2019.

Nagrare VS, Naik VCBN, Fand BB, Gawande SP, Nagrale DT, Gokte-Narkhedkar, N, Waghmare VN. 2019. Cotton: Integrated pest, disease and nematode management (English version). *Technical Bulletin No 1/2019*. ICAR-Central Institute for Cotton Research, Nagpur, Maharashtra, India. pp – 39.

Nagrare VS, Naik VCBN, Fand BB, Gawande SP, Nagrale DT, Gokte-Narkhedkar, N, Waghmare VN. 2019. Cotton: Integrated pest, disease and nematode management (Marathi version). *Technical Bulletin No 1/2019*. ICAR-Central Institute for Cotton Research, Nagpur, Maharashtra, India. pp – 39.

Nagrare VS, Naik VCBN, Fand BB, Gawande SP, Nagrale DT, Gokte-Narkhedkar, N, Waghmare VN. 2019. Cotton: Integrated pest, disease and nematode management (Hindi version). *Technical Bulletin No 1/2019*. ICAR-Central Institute for Cotton Research, Nagpur, Maharashtra, pp – 39.

Naik VCBN, Nagrare VS, Wawdhane P, Fand BB 2019. Management of sucking pests and bollworms in cotton, *Baliraja (Marathi)*, May, 2019. 98-101.

Fand BB, Nagrare VS. 2018. Timely terminate the crop and avoid pre-monsoon sowing of cotton for managing pink bollworm. *Cotton: Production and management technologies (Souvenir)*, Cotton Fair – 30 October, 2018. ICAR-Central Institute for Cotton Research, Nagpur. pp. 49.

Fand BB, Nagrare VS, Naikwadi BV 2018. Safe handling of insecticides in cotton. Extension folder, ICAR-Central Institute for Cotton Research, Nagpur, Maharashtra, India. pp. 1-4.

- Kumar M, Fand BB 2016. Ionising radiation treatment for increased food production and preservation. Krishiking, December 2016 - January 2017, pp. 30-32.
- Yadav DS, Fand BB 2016. Environmentally safe integrated grape pest management. Grapes Report, August, 2016. pp. 54-56.
- Fand BB, Yadav DS 2016. Challenges of grape pest management in the context of climate change. Grapes Report, August, 2016. pp. 57-65.
- Sawant SD, Fand BB 2016. Calender of Operations in Grapes. ICAR-National Research Centre for Grapes, Pune, Maharashtra, India. p. 1-12.
- Kamble AL, Minhas PS, Fand BB, Singh NP 2015. Towards sustainable livelihood of tribal farmers: Achievements under TSP by NIASM, Baramati. Technical Bulletin No. 7, ICAR-National Institute of Abiotic Stress Management, Malegaon, Baramati. 413 115. Pune, Maharashtra. p. 41
- Bal SK, Saha S, Fand BB, Singh NP, Rane J, Minhas PS 2014. Hailstorms: Causes, Damage and Post-hail Management in Agriculture. Technical Bulletin No. 5, ICAR-National Institute of Abiotic Stress Management, Malegaon, Baramati. 413 115. Pune, Maharashtra (India). p. 44.
- Fand BB, Kumar, M. Kamble, A.L. Bal, S.K. and Minhas, P.S. 2013. Temperature-based phenology model for mealybug *Phenacoccus solenopsis*, ICAR News –A Science and Technology Newsletter, October-December 2013, 19(4):7-8.
- Fand BB, Kumar M 2013. Fluctuating temperatures do influence insect pest incidence. Grapes Report, March 2013, pp. 07-08.
- Fand BB, Kumar M. Kambl AL, Bal SK 2012. Forecasting the potential changes in the abundance of mealybug *Phenacoccus solenopsis* Tinsley using temperature-based phenology model linked to GIS. Grapes Report, December 2012, pp. 10-11.

Abstracts published in Proceedings of Conferences/Seminars/Symposia

- Fand, BB**, Nagrare, VS, Naik, VCB, Gokte-Narkhedkar, N, Waghmare, VN. 2019. Degree-day based phenology model for predicting the developmental events in cotton pink bollworm *Pectinophora gossypiella* in the context of climate change. In: The abstracts of International Plant Protection Congress, Hyderabad, India. 10-14 November, 2019
- Fand, BB**, Shashank P, Suroshe SS, Chandrasekhar K, Meshram NM, Timanna. 2019. Invasion risk of South American tomato pinworm *Tuta absoluta* in India based on MaxEnt ecological niche modelling. In: The abstracts of International Plant Protection Congress, Hyderabad, India. 10-14 November, 2019
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the abundance of mealybug *Phenacoccus solenopsis* Tinsley (Hemiptera: Pseudococcidae), pp. 9-10. In: Souvenir-cum-Abstracts of the IVth International Insect Science Congress, February 14-17, 2013, University of Agricultural Sciences, Bangalore, India.

Fand, BB 2012. Modeling the Impact of Climate Change on Potential Geographic Distribution of Polyphagous Mealybug *Phenacoccus solenopsis* in India, pp. 37-38. In: Abstracts of the IVth National Symposium on Plant Protection in Horticultural Ecosystems: Emerging Challenges and Sustainable Pest Management, April 25-28, 2012, Indian Institute of Horticultural Research, Bangalore, India.

15. Any other Information (maximum 500 words)

Professional trainings acquired

S. N.	Training programme	Duration	Institute/ Place
1.	5 days training on “Electrophysiological recording and analysis of insect chemosensory responses”	June 13-17, 2016	CSIR-National Chemical Laboratory, Pune
2.	28 days training programme on “Introduction to GIS”	May 05-30, 2014	National Remote Sensing Centre (NRSC), Hyderabad
3.	21 days Winter school on “Molecular mechanisms involved in conferring abiotic stress tolerance to the biological control agents”	December 1-21, 2011	ICAR-National Bureau of Agriculturally Important Insects (NBAII), Bangalore
4.	10 days NAIP sponsored training programme on “Forecast Modelling in Crops”	August 03-12, 2011	ICAR-Indian Agricultural Statistics Research Institute (IASRI), New Delhi
5.	4 months “Foundation Course on Agricultural Research Service (FOCARS)”	April 20-August 17, 2010	ICAR-National Academy of Agricultural Research Management (NAARM), Hyderabad

Research projects completed

S.N.	Project title	Role	Implementing institute	Period (from-to)	Funding agency	Project cost (Rs. In lakhs)
<u>Externally funded</u>						
1.	Out Reach Programme on Management of Sucking Pests	Principal Investigator	ICAR-National Research Centre for Grapes, Pune	2016-2017*	Indian Council of Agricultural Research, New Delhi	15.00
2.	Consortia Research Programme on Borers: Management of stem borer in	Co-Principal Investigator	ICAR-National Research Centre for Grapes, Pune	2016-2017*	Indian Council of Agricultural Research, New Delhi	15.00

	grapes					
3.	Predicting the impact of climate change on regional and seasonal abundance of major soybean insect pests using temperature-driven phenology modelling and GIS-based risk mapping approach	Principal Investigator	ICAR-National Institute of Abiotic Stress Management, Baramati	2013-2016	Science and Engineering Research Board, DST, Govt. of India (Fast Track Scheme for Young Scientists)	17.25
<u>Institute funded</u>						
4.	Multi-pronged strategy for the management of mealybugs in grapes	Co-Principal Investigator	ICAR-National Research Centre for Grapes, Pune	2016-2017*	-	-
5.	Impact of climate change on physio-biochemical behaviour and hormonal regulations in soybean and <i>rabi</i> sorghum	Co-Principal Investigator	ICAR-National Institute of Abiotic Stress Management, Baramati	2012-2015	-	-
6.	Abiotic stresses affecting crop–insect pest interactions in the context of global climate change	Principal Investigator	ICAR-National Institute of Abiotic Stress Management, Baramati	2011-2014	-	-

* On transfer from NIASM to NRCC, taken over as a PI or Co-PI of already running projects (2013-2017).

Ongoing research projects

S.N.	Project title	Role	Implementing institute	Period (from-to)	Funding agency	Project cost (Rs. In lakhs)
<u>Externally funded</u>						
7.	Dissemination of IRM Strategies in India (TMC MM II) (NFSM:CC, IRM-PBW)	Co-Principal Investigator	ICAR-Central Institute for Cotton Research, Nagpur	2018-2020	Ministry of Agriculture, Govt of India	450.00
<u>Institute funded</u>						
8.	Investigations into exacerbation of pest status of cotton pink bollworm <i>Pectinophora gossypiella</i> (Saunders) in the context of climate change through development of phenology model.	Principal Investigator	ICAR-Central Institute for Cotton Research, Nagpur	2017-2020	-	-
9.	Elucidating eco-toxicity and resistance development in sucking pests against newer insecticides used in cotton.	Co-Principal Investigator	ICAR-Central Institute for Cotton Research, Nagpur	2017-2020	-	-
10.	Development of Bt cotton varieties using deregulated and non-deregulated transgenic events	Co-Principal Investigator	ICAR-Central Institute for Cotton Research, Nagpur	2018-2023	-	-

Ability to write projects for funding by the donor agencies

S.N.	Project title	Funding agency	Period	Budget (Lakh Rs)	Scheme and Grant No.
1.	Predicting the impact of climate change on regional and seasonal abundance of major	Science and Engineering Research Board (SERB), Department of Science and Technology, Government	2013-16	17.25	Fast Track Scheme for Young Scientists,

	soybean insect pests using temperature-driven phenology modelling and GIS-based risk mapping approach	of India			Grant No. SB/YS/LS-06/2013
2.	Out Reach Programme on Management of Sucking Pests	Indian Council of Agricultural Research, New Delhi	2013-2017	15.00	ORP-SP
3.	Consortia Research Programme on Borers: Management of stem borer in grapes	Indian Council of Agricultural Research, New Delhi	2013-2017	15.00	CRP-Borers
4.	Dissemination of IRM Strategies in India (TMC MM II) (NFSM:CC, IRM-PBW)	Department of Agriculture, Cooperation and Farmers Welfare (Crop Division), Ministry of Agriculture and Farmers Welfare, Government of India,	2018-2020	450.00	F. No. 2-19/2014-CU-IV, dated 20/8/2018

ORAL RESEARCH PAPER PRESENTATIONS IN CONFERENCES/ SEMINARS/SYMPOSIA

S.N	Title of the paper presented	Conferences/Seminars/	Venue	Year	Remark
1.	Degree-day based phenology model for predicting the developmental events in pink bollworm <i>Pectinophora gossypiella</i> in the context of climate change	International Plant Protection Congress (IPPC)-2019	Hyderabad International Convention Center, Hyderabad, India	10-14 November, 2019	Invited presentation
2.	Invasion risk of South American tomato pinworm <i>Tuta absoluta</i> in India based on MaxEnt ecological niche modelling	International Plant Protection Congress (IPPC)-2019	Hyderabad International Convention Center, Hyderabad, India	10-14 November, 2019	
3.	Seasonal Density of Stem Fly <i>Melanagromyza sojae</i> (Zehntner) (Diptera: Agromyzidae) Describes the Dynamics of Parasitism in Soybean Ecosystem	Indian Ecological Society's International Conference on Natural Resource Management: Ecological Perspective	Sher-E-Kashmir University of Agriculture and Technology, Jammu, Jammu & Kashmir, India	18-20 February, 2016	
4.	Predicting the daily temperature	International	Maharana	27-29	Third

	fluctuations on development, survival and reproduction in Soybean leaf eating caterpillar (<i>Spodoptera litura</i>)	Conference: Changing scenario of pest problems in agri-horti ecosystem and their management	Pratap University of Agriculture and Technology, Udaipur, India	November, 2014	Prize for Best Oral Presentation
5.	Temperature-based phenology modeling and GIS-based risk mapping: A tool for forecasting potential changes in the abundance of mealybug <i>Phenacoccus solenopsis</i> Tinsley (Hemiptera: Pseudococcidae)	IVth International Insect Science Congress	University of Agricultural Sciences, Bangalore, India	February 14-17, 2013	
6.	Modeling the Impact of Climate Change on Potential Geographic Distribution of Polyphagous Mealybug <i>Phenacoccus solenopsis</i> in India	IVth National Symposium on Plant Protection in Hort Ecosystems: Emerging Challenges & Sustainable Pest Management	Indian Institute of Horticultural Research, Bangalore, India	April 25-28, 2012	First Prize for Best Oral Presentation

INVITED TALKS/ LEAD LECTURES

S.N.	Topic of lead lecture	Training programme	Place	Date
1.	Safe use of insecticides in cotton	Three days training programme on pesticide application techniques and safety measures	VANAMATI, Nagpur	July 26, 2018
2.	Current Scenario of Cotton Pest in Maharashtra and future strategies for its Management	5 days training programme on “IPM for the Agriculture Extension Officials of State department” organised	Central Integrated Pest Management Centre, Nagpur	March 06, 2018
3.	Pest smart IPM strategies for Insect Resistance Management	21 days training programme on “Insect Resistance to Bt toxins and insecticides in cotton	ICAR-CICR, Nagpur	January 20,
4.	Risk of aggregating resistance development in insects under predicted climatic changes	21 days training programme on “Insect Resistance to Bt toxins and insecticides in cotton	ICAR-CICR, Nagpur	February 06, 2018
5.	Pest Smart Strategies for Climate Smart Agriculture	Model training course on “Climate smart agriculture for enhancing crop and water productivity under abiotic stresses’	ICAR- National Institute for Abiotic Stress Management, Baramati, Pune, Maharashtra	December 21, 2017
6.	Management of thrips and	Two days Comprehensive	ICAR-National	November

	jassids in vineyards	Orientation Training for Project Staff of AFPRO: Production of Quality Grapes	Research Centre for Grapes, Pune - 412 307, Maharashtra, India	07-08, 2016
7.	Insect pest problems in grapes and critical issues in their management, and safe handling of insecticides/agrochemicals used in grape production	Training programme for Fair-trade certified Grape farmers	Krishi Vigyan Kendra, Yashwantrao Chavan Maharashtra Open University, Nashik	September 15, 2016
8.	Management of thrips and jassids in vineyards	Two days training program for team of E. I. DuPont India Limited: Plant Protection in Grapes	ICAR-National Research Centre for Grapes, Pune - 412 307, Maharashtra, India	August 05-06, 2016
9.	Life table analysis and process-based phenology modelling – a tool for predicting insect pest dynamics under potential climate change	ICAR sponsored winter school on Advances in Pest Forecast Models and Decision Support Systems for Crop Protection in Changing Climate Scenario	ICAR-Central Research Institute for Dryland Agriculture, Hyderabad, India.	November 09, 2014,
10.	Abiotic stresses affecting crop-insect pest interactions in the context of global climate change	National Training programme on “Advanced techniques for production of horticultural crops” organized by MPKV, Rahuri	ICAR-National Institute of Abiotic Stress Management, Baramati, Maharashtra, India	August 22, 2012
11.	Abiotic stresses affecting crop-insect pest interactions in the context of global climate change	National training programme on biotic and abiotic stress management in fruit crops, MPKV, Rahuri	ICAR-National Institute of Abiotic Stress Management, Baramati, Maharashtra, India	September 29, 2011

Transfer of technology

i. Capacity building of cotton and grape farmers

S.N.	Topic of lecture	Training programme	Place	Date
1.	Safety precautions in pesticide handling in cotton	One day farmers’ training on planning for kharif season 2019	Sub-divisional Agriculture Office, Pandharkawada, Dist Yavatmal, Maharashtra	June 08 2019
2.	IPM strategies and window-based approach for pink bollworm	One day farmers’ awareness camp on “Management of pink bollworm in cotton” organized by ICAR-CICR under Tribal	Ankhoda, Tal. Chamorshi, Dist. Gadchiroli,	October 05, 2018

	management in cotton	Sub Plan scheme,	Maharashtra, India	
3.	IPM strategies and window-based approach for pink bollworm management in cotton	One day farmers' awareness camp on "Management of pink bollworm in cotton" organized by ICAR-CICR under Tribal Sub Plan scheme,	Chamorshi, Dist. Gadchiroli, Maharashtra, India	September 19, 2018
4.	Integrated Management of pink bollworm in cotton	One day farmers training programme organized by Chimur Cotton Industries, Chimur, Dist Chandrapur	Chimur, Dist. Chandrapur, Maharashtra, India	September 17, 2018
5.	Safe handling of pesticides in cotton	One day farmers training organized by Taluka Agriculture Officer, Nagpur	Auditorium, ICAR-CICR, Nagpur, Maharashtra, India	August 03, 2018
6.	Integrated Management of pink bollworm in cotton	District level One day farmers training programme	District Superintendent Agriculture Officer, Chandrapur, Maharashtra, India	May 22, 2018
7.	IPM strategies and window-based approach for pink bollworm management in cotton	"Kisan Kalyan Programme" organized by Taluka Agriculture Office, Katol,	Katol, Dist. Nagpur, Maharashtra, India	May 02, 2018
8.	Safe handling of pesticides	One day farmers training organized by ICAR-CICR under "Tribal Sub Plan" scheme	Narhar, Tal. Pargaon Seoni, Dist Nagpur, Maharashtra, India	March 13, 2018
9.	Safe handling of pesticides	One day farmers training organized by ICAR-CICR under "Tribal Sub Plan" scheme	Lohgad Budhla, Kalameshwar, Dist. Nagpur, Maharashtra	February 27, 2018
10.	Strategies for pink bollworm management in BT cotton and safety precautions for insecticide use	One day farmers training jointly organized by Akhil Bharatiy Maheshwari Samaj and Dr. PDKV, Akola on "Advanced techniques of cotton farming and IPM strategies for pink bollworm"	Daryapur, Tal. Daryapur, Dist. Amaravati, Maharashtra, India	February 15, 2018
11.	Safe handling of	One day farmers training	Jambha Khurd, Tal	January 16,

	insecticides and importance of label claim for insecticide use in cotton	organized by ICAR-CICR under “Awareness camp for pink bollworm resistance management in BT cotton”	Murtijapur, Dist. Akola, Maharashtra, India	2018
12.	Safe handling of insecticides in cotton	One day farmers training organized by ICAR-CICR under “Mera Gaon Mera Gaurav” programme	Girad, Tal Samudrapur, Dist. Wardha, Maharashtra, India	December 28, 2017
13.	Managing insect pests in grape vineyards with special reference to resting period and foundation pruning	Maharashtra State Grape Growers’ Association, Regional discussion forum: Solapur Division	Solapur, Maharashtra, India	May 29, 2017
14.	Managing insect pests in grape vineyards with special reference to resting period and foundation pruning	Maharashtra State Grape Growers’ Association, Regional discussion forum: Sangli Division	Sangli, Maharashtra, India	May 21, 2017
15.	Managing insect pests in grape vineyards with special reference to resting period and foundation pruning	Maharashtra State Grape Growers’ Association, Regional discussion forum: Pune Division	Baramati, District Pune, Maharashtra, India	May 20, 2017
16.	Strategies for insect pest management in grapes during fruiting season	Workshop on “residue free export quality grape production”	Sub Divisional Agriculture Office, Khanapur, District Sangli, Maharashtra, India	December, 2016
17.	Strategies for insect pest management in grapes during fruiting season	District-level workshop for grape growers	District Superintendent Agriculture Office, Jalna, Maharashtra, India	October 24, 2016
18.	Integrated pest management strategies of residue free grape production	Maharashtra State Grape Growers’ Association, Regional discussion forum: Pune Division	Krishi Vigyan Kendra, Babhaleshwar, Ahmednagar, Maharashtra, India	September, 2016
19.	Grape insect pest management during fruit pruning season	Maharashtra State Grape Growers’ Association, Regional discussion forum:	Baramati, Pune, Maharashtra, India	September, 2016

		Pune Division		
20.	Grape insect pest management during fruit pruning season	Maharashtra State Grape Growers' Association, Regional discussion forum: Pune Division	Krishi Vigyan Kendra, Narayangaon, Dist Pune, Maharashtra, India	September, 2016
21.	Challenges for grapevine insect pest management under climate change scenario	Annual Grape Seminar 2016 organized by Maharashtra State Grape Growers' Association, Pune, August 26-28, 2016	Shiv Chhatrapati krida Sankul, Balewadi, Pune, Maharashtra, India	August 26, 2016
22.	Management of thrips and leafhoppers in vineyards	Two days training programme on Integrated Pest Management in grapes for field staff of M/s EI DuPont India Pvt Ltd, August 05-06, 2016	ICAR-National Research Center for Grapes, Pune	August 05, 2016
23.	Management of insect and mite pests in grapevines	One day Grape Seminar Maharashtra State Grape Growers' Association, Regional discussion forum: Nashik Division	Satana, Dist. Nashik, Maharashtra, India	July 24, 2016

ii. Mass media coverage: Television/ Radio talk

S.N.	Topic of lecture	TV/Radio programme	Place	Date
1.	Safe handling of insecticides in cotton https://www.youtube.com/watch?v=uTZbuzDyHZo	Aamachi Mati Aamachi Manasa (Our Soil, Our People)	Sahyadri Channel, Doordarshan Kendra, Nagpur	July 18, 2018
2.	Integrated Management of mealybugs and stem borers in Grapes https://www.youtube.com/watch?v=dddeP1_iWYQ&t=11s	Aamachi Mati Aamachi Manasa (Our Soil, Our People)	Sahyadri Channel, Doordarshan Kendra, Worli, Mumbai, Maharashtra	December 19, 2016
3.	Challenges of climate change for insect pest management in agriculture	Sharada Krishi Vahini, KVK, Baramati	Krishi Vigyan Kendra, Baramati, Pune, Maharashtra	June, 2015

Teaching/ Training/ Guidance to students/Course credits or lectures delivered

i. Teaching/ lectures delivered

S.N.	Topic of lecture	Delivered to	Place	Date
1.	Selective Reading In entomology and preparations for ARS (Innovative Interaction Series organised for Post Graduate students)	Students of MSc (Agricultural Entomology)	Entomology Section, College of Agriculture, Nagpur (Dr. PDKV, Akola, Maharashtra, India	October 26, 2018
2.	Career opportunities in ICAR and preparation for Agricultural Research Services (ARS) Examinations	Students of BSc (Agriculture)	Anand Niketan College of Agriculture, Warora, Dist. Chandrapur (Dr. PDKV Akola), Maharashtra, India	July 08, 2018
3.	Conducting final practical examination and viva voce	Students of M.Sc. (Wine Brewing and Alcohol Technology)	Vasant Dada Sugar Institute (VSI), Pune, Maharashtra, India	December 06, 2016
4.	Important safety issues in grapes (Evaluation of home assignments given to the students)	Students of M.Sc. (Wine Brewing and Alcohol Technology)	Vasant Dada Sugar Institute (VSI), Pune, Maharashtra, India	November, 2016
5.	Predators, parasitoids & pathogens of insect pests of grapevines	Students of M.Sc. (Wine Brewing and Alcohol Technology)	Vasant Dada Sugar Institute (VSI), Pune, Maharashtra, India	October 10, 2016

ii. Students guided for MSc/PhD

SN	Name of student	Degree	University/ Institute	Research topic	Role	Year
1.	Mr. Hemant Peddu	M.Sc. (Agricultural Entomology)	College of Agriculture, Nagpur (Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra, India	Estimation of developmental thresholds and thermal requirements for cotton pink bollworm <i>Pectinophora gossypiella</i> Saunders	Co-Advisor and Member of Advisory Committee	2018-2019

	Mr. Abhishek V Busnoor	M.Sc. (Agricultural Entomology)	College of Agriculture, Nagpur (Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra, India	Evaluation of newer insecticides against pink bollworm under laboratory conditions	Co-Advisor and Member of Advisory Committee	2019-2021
2.	Miss Amruta Deshmukh	Ph.D. (Agricultural Meteorology)	College of Agriculture, Pune (Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra, India	Crop-weather-pest relationship and validation of DSSAT model for rice varieties under different transplanting times	Member of Advisory Committee	2016-2021
3.	Mr. S.S. Misal	Ph.D. (Agricultural Meteorology)	College of Agriculture, Pune (Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra, India	Crop-weather-pest relationship and validation of DSSAT model for wheat varieties under different sowing times	Member of Advisory Committee	2016-2019
4.	Mr. Subramanyam	Ph.D. (Agricultural Meteorology)	College of Agriculture, Pune (Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra, India	Crop-weather-pest relationship and validation of DSSAT model for Sorghum varieties under different sowing times	Member of Advisory Committee	2016-2019

(Babasaheb B. Fand)