DR A.P.PADMAKUMARI

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1. Personal bio-data:

a) Position/Designation : Principal Scientist
b) Joining date in ICAR : 25-07-1994, (DOB: 13/07/1967)
c) Discipline and Specialization : Agricultural Entomology
d) Training/advance exposure in the area of work:

International

- Training at IRRI, Philippines on "Transgenic Rice: Production and Deployment with Special reference to sheath blight and stem borer resistance" from 10 -31st October, 1999.

National:

- Training at "International Centre for Genetic engineering and Biotechnology, New Delhi on Insect Resistance: role of Bt toxin" from 11-22 December, 2000
- Refresher Course on 'Information Technology in Agriculture' from 3 – 23 December, 2001 at National Academy of Agricultural Research Management, Hyderabad.
- Summer School on "Recent Advances in Agricultural Research Project Management' from 9- 29 April, 2003 at National Academy of Agricultural Research Management, Hyderabad
- Attended the training programme on 'Data analysis using SAS- component 1 organized by NAARM, Hyderabad under SSCNARS from 15 Sept. - 21 September, 2010

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e) Contribution to the scientific advancement:

- Aromatic variety as an inter crop/ trap crop) for every 2.5-3m of main crop in east- west direction helps in reducing the damage by yellow stem borer in the main crop by half of that in the trap crop with a favourable benefit cost ratio. The main crop variety can be of farmers' choice. The sowing date of Pusa basmati 1 has to be adjusted so as to flower a week before the main crop.
- Soil application of silicon sources like rice husk ash and solubilisers (imidazole) reduces damage by yellow stem borer.
- Application of high nitrogen increases yellow stem borer incidence in the field.
- Identified the efficacy of indigenous entomopathogenic nematodes against both egg mass and larvae of yellow stem borer and leaffolder larvae.
- Standardization of screening procedures for evaluation of rice germplasm against yellow stem borer in the field and identification of new sources of tolerance.
- Devising bioassay protocols for testing efficacy of rice lines developed through novel approaches like Bt, RNAi, EMS Mutation against Yellow stem borer.

- Involved in the study of insect plant interactions with special reference to yellow stem borer and gall midge in rice.
- Identification of new sources of gall midge and stem borer resistance.

2. Future Planning of research:

- Indepth understanding of the insect plant interactions with reference to yellow stem borer and gall midge in rice
- Identification /development of a stem borer tolerant rice cultivar.
- Evaluation of mechanisms for stem borer susceptibility and tolerance in various rice genotypes.
- Monitoring of the status of gall midge biotypes
- Exploitation of induced resistance for rice pest management.
- Development/ identification of various techniques/ tactics for stem borer management.
- Forecasting of stem borer incidence for its management.
- Integration of various pest management options like entomopathogenic nematodes for protection against rice pests.

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3. Publications:

- M. Jeer , K. Suman, T. Uma Maheswari, S.R. Voleti, **A.P. Padmakumari***. 2018 Rice husk and imidazole application enhances silicon availability to rice plants and reduces yellow stem borer damage. Field Crops ResearchVolume 224, 1 July 2018, Pages 60–66 .Elsevier publication.(*- corresponding author).

- Dhanasekar Divya, Kanaparthi Ratna Madhavi, Muralidharan Ayyappa Dass, Garladinne Mallikarjuna, Roshan Venkata Maku, Raman Meenakshi Sundaram, Gouri Sankar Laha, **Ayyagari Phani Padmakumari**, Hitendra Kumar Patel, Madamsetty Srinivas Prasad, Ramesh Venkata Sonti and Jagadish Sanmallappa Bentur .2018. Expression Profile of Defense Genes in Rice Lines Pyramided with Resistance Genes Against Bacterial Blight, Fungal Blast and Insect Gall Midge. Rice 11:40. https://doi.org/10.1186/s12284-018-0231-4 .

- P. Renuka, Maganti S. Madhav, **A. P. Padmakumari**, Kalyani M. Barbadikar, Satendra K. Mangrauthia, K. Vijaya Sudhakara Rao, Soma S. Marla, and V. Ravindra Babu.2017. RNA-seq of Rice Yellow stem borer Scirpophaga incertulas reveals molecular insights during four larval developmental stages. 2017. G3: Genes, Genomes, Genetics. https://doi.org/10.1534/g3.117.043737.

- Abhishek Ojha, Deepak Sinha, **A.P. Padmakumari**, J.S. Bentur, and Suresh Nair.2017. Bacterial community structure in the Asian Rice Gall Midge reveals a varied microbiome rich in Proteobacteria. Scientific Reports 7, Article number: 9424(2017). doi:10.1038/s41598-017-09791-0

- Jeer, M., Telugu, U. M., Voleti, S. R. and **Padmakumari, A. P**. 2016. Soil application of silicon reduces yellow stem borer, *Scirpophaga incertulas* (Walker) damage in rice**.** Journal of Applied Entomology. Version of Record online: 26 MAY 2016. DOI: 10.1111/jen.12324

- Ruchi Agarrwal, **Ayyagari Phani Padmakumari**, Jagadish S. Bentur and Suresh Nair.2016. Metabolic and transcriptomic changes induced in host during hypersensitive response mediated resistance in rice against the Asian rice gall midge. Rice (2016) 9:5. DOI 10.1186/s12284-016-0077-6 (2014 Impact Factor 3.919)

- Kola VSR, Renuka P, **Padmakumari AP,** Mangrauthia SK, Balachandran SM, Ravindra Babu V and Madhav MS (2016) Silencing of CYP6 and APN Genes Affects the Growth and Development of Rice Yellow Stem Borer, Scirpophaga incertulas. Front. Physiol. 7:20. doi: 10.3389/fphys.2016.00020

- **A.P. Padmakumari**, G. Katti, V. Sailaja, Ch. Padmavathi, V. Jhansi Lakshmi, M. Prabhakar and Y.G. Prasad .2013. Delineation of larval instars in field populations of paddy yellow stem borer, Scirpophaga incertulas (Lepidoptera: Pyralidae). Oryza . Vol 50.(3) 259-267.

Recognition: Fellow of Plant Protection Association of India,
Life Fellow of Entomological society of India

Book Chapter

JS Prasad, **AP Padmakumari***, N Soma Sekhar and G Katti . Entomopathogenic nematodes as a component in rice pest pest management : A journey from lab to land. 2016. Chapter 14 pp 199-212. In Plant Health management for food security Issues and approaches Eds: Gururaj katti, Anitha Kodaru, Nethi Soma Sekhar, GS Laha, B Sarath Babu and KS Vara. Prasad. Published by Daya publishing house A division of Astral International PVT. LTD NewDelhi.230ppISBN978-93-5124-761-6.

4. Other relevant activities of Scientist :

- Involved in co-ordination of Entomology trials under All India Coordinated Rice Improvement programme with emphasis on host plant resistance and trap crop for stem borer management.
- Maintenance of gall midge in greenhouse and screening of rice lines for gall midge and field screening for yellow stem borer to identify new sources.
- As a member of Advisory committee for M.Sc (Ag) and Ph.D students of ANGRAU, PJTSAU and Osmania University.

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