

IN CONVERSATION WITH BIOCONTROL EXPERT DR. GANGA VISALAKSHY

HOLDING THE SELF-CONFIDENCE AS SUPERPOWER DR. GANGA VISALAKSHY SPEAKS TO IE ASSOCIATE EDITOR DR. BHAGYASHREE ABOUT HER JOURNEY FROM A NON-MICROBIOLOGIST TO DEVELOPING THE TWO SUCCESSFUL MICROBIAL FORMULATIONS FOR MANAGEMENT OF PEST IN HORTICULTURAL CROPS



Dr. P N Ganga Visalakshy was born on 7th November 1956, she had her schooling at Palakkad, Kerala in Kanikka Matha English Medium girls high school. She did her graduation from Mercy college, Palakkad with Zoology as main, botany and chemistry as subsidiary subjects. After finishing graduation, she did her post-graduation at Government Victoria College at Palakkad with Zoology as main and Entomology as special subject, where I stepped into world of Insects in 1980. In 1981, married and moved to Bengaluru, Karnataka. I have joined to Commonwealth Institute of Biological Control in 1984, Indian station, Bengaluru, initially joined to pursue Ph. D. course by

registering under Mysore University. Later absorbed as entomological assistant in the project “Survey on natural enemies of Diaspine scale insects in south India, parallely continued to do Ph. D, but could not complete due to selection as scientist in Indian Council of Agricultural Research (ICAR) through Agricultural Research Service (ARS) In 1987, joined as a scientist at ICAR-IIHR (Indian Institute of Horticultural Research), Bengaluru at Division of Entomology and Nematology (Biological control of weeds laboratory). Obtained Ph. D in Zoology from Bengaluru University in 2001.

Dr. Ganga Visalakshy has made significant contribution in biological control of weeds

and crop pests by using microbials and macrobials. Her technology has made significant contribution in suppression of weeds of national importance. In addition to field application and its impact studies, she worked on their basic aspects such as diapause, dispersal, biotic potential etc. the technique developed by her on determining the age of exotic biocontrol agent of Parthenium, *Zygogramma bicolorata* Pallister adults based on anatomical studies of wing muscles and reproductive organelles and the effect of feeding on sunflower become important findings to resolve the controversy of beetle's host specificity to Parthenium. In 2001, she shifted her field of research to microbial control of horticultural crops and worked till retirement. She worked on sucking pests such as hoppers and thrips on mango, tea mosquito bug in guava and capsicum and rose in polyhouse. Being in the field of microbes, she developed oil-based formulation of *Metarhizium anisopiliae* against hoppers and thrips and *Beauveria bassiana* against tea mosquito bug (TMB) with the shelf life of 14-24 months. The wettable powder formulation reputed to be effective against TMB in tea and on cashew. She was awarded the honorary fellow by the Indian Society of Weed Science, Fellow of the society of Biological Control and Association for Advancement of Pest Management of Horticultural Ecosystem, she

was also awarded Dr. Sitanandan award for her contribution in the field of Biological Control. She has 300 publications in national and international journals and handled many DBT, DST, NABARD, GoI and ICAR project during her tenure. She retired as principal scientist from ICAR-IIHR Bengaluru in 2018.

BSN: Thank you for speaking to Indian entomologists, how did you pursue career in Entomology at ICAR-IIHR?

GV: I didn't have any idea of Entomology, during my masters at Govt. Victoria College, Kerala, we had a special subject "Entomology", there my journey towards entomology begun. After joining as a scientist, I had the opportunity to work in the field of biological control by using macrobials and microbials at IIHR. From 1987 to 2001, worked on biological control of weeds using insects. From 2001 to 2018, worked on biological control of crop pests mainly concentrating on microbials.

BSN: What was your childhood like and what inspired you to be the woman you are today?

GV: Am a village girl, i performed average in my studies till my high school later I worked hard to get good marks. The Inspiration from mother is what am today! of course my father never objected in pursuing higher studies, my mother was very particular that her daughters

must be educated, employed and independent.

My parents wished to see me as a lawyer or medical doctor since my passion was in teaching, I pursued master's degree. After marriage my husband and in-laws were also supportive in my career and higher studies.

BSN: When faced with obstacles or hardship, where do you find the strength to overcome it?

GV: It's my inner strength. Most of the times I don't mind what had happened, what I got it. I accept things, over time it gets better. When I face obstacles at times, I get disappointed, to get disappointed is a part of job. Alternative way to get out of it is "smile and take it off". I usually don't discuss my problems with others.

BSN: At your time, women from different walks of life faced gender stereotypes that has created a barrier to get education and career, how did you overcome it?

GV: While studying I didn't not face gender inequality or biasness as I did my education at girls college, I had very good time. After joining to work at IIHR, interpersonal relationship was very good without any conflict and gender bias so I never faced any gender related problems.

BSN: In your career, did you ever face any hardship just because you are women? How did you bounce back from that situation?

GV: As a woman, I never faced any hardships during my career. In 2001, I was shifted to work on microbial control of crop pests, it was an entirely different field for me. Initially little disturbed and confused. But then with determination not to be let down I took research with lot of reading of books in basic, applied and hands on training manuals, started work from isolation to formulation of entomopathogens. Finally with all the hard work, I could bag DBT, DST, Government of India, and ICAR projects on microbials, along with this I could develop oil-based formulation of *Metarhizium anisopiliae* against hoppers and thrips and *Beauveria bassiana* against tea mosquito bug (TMB) with shelf life of 14-24 months which are ready for CIBRC registration.

BSN: Can women, their behaviour or attitude be their own biggest obstacles?

GV: No. I don't think it's because of their behaviour or attitude, there may be some other reason which I don't know. Women are equally capable of doing their job better.

BSN: Although the need for biological control is in great demand, do you think adoption is very slow?

GV: Yes! lack of awareness of the technology by the end users such as farmers and non-availability of biological control agents are some of the important factors in the low adoption of the technology. Farmers expect/presume that biological control agents

are easily available over the counter like chemical pesticides and expect results also faster.

At grass root level they do not understand the intricacies and specificity of biological control. So as scientist we must make them understand about the pros and cons of the technology before they adopt. Whereby the confidence of the farmers on the technology is not lost.

BSN: What would you say *Zygogramma bicolorata* Pallister controversy on sunflower?

GV: The exotic host specific biological control agent *Z. bicolorata* Pallister imported was found to be effective against *Parthenium hysterophorus*, a weed of national importance in India. However, after years of field releases, the beetles were reported feeding on sunflower, a major oil seed crop of our country, raising concern on its host expansion or host specificity in 1992. Further field releases were banned, and a project was floated by ICAR to determine the pest potential of the insect in sunflower.

A study to determine the risk assessment of the insect to sunflower was initiated by me by developing an age index for adults of 0-10 days old based on the status of cuticle, fat body, indirect flight muscles and reproductive organelles.

Most of the field collected adults on sunflower crop were found to have soft

cuticle, absence of fat bodies accumulation, undeveloped indirect flight muscles and reproductive organelles indicating they are less than 10 days old and not capable of flight.

Field observations also supported the results whereby large number of the beetles were found crawling to the sunflower field from the parthenium wasteland.

BSN: Why biocontrol practices in India have not been optimally utilized as they could be?

GV: In other countries, I presume it could be due to growing same crops in large area and have more area under polyhouse so adoption of biological control is easy with more impact. In India, farmers have small holdings, diversified crop with multitude of pest, less knowledge on biological control/not exposed to biological control so impact may not be so much. Here in India, if one farmer adopts biological control, they may face distraction from neighbouring farmers by spraying pesticides so biological control is not as effective as expected. We are democratic country, government can support and give subsidy to take up biological control but can't force!

BSN: What can be done to get easy access to biocontrol agents by farmers?

GV: Government must Increase the biological control agent's multiplication units by providing funds for it. Government

can assist private company to take up mega projects to incorporate biological control agents in few crops, may be perennial crops/polyhouse where the impact can be more, show the success, educate on advantages of biological control, get the confidence of farmers, then farmers starts coming to you and then expand it to other crops wherever possible.

BSN: How would you like to see future of Biological control practices in India?

GV: Adoption of biofertilizers and biopesticides for soil borne pests has been increasing. So I would like to recommend more research work on biological control of aerial pests whereby it becomes an important component in Integrated Pest Management.

BSN: What advice would you give to our young women entomologist and the scientists working on biological control?

GV: Selection of pests and crops where biological control is to be initiated is important as biological control technology is very specific. Understanding the basic bioecological factors influence the pestilence is also important to manage the pest by biological control.

Biological control is a very specific field, in depth knowledge in the basics of methodology is needed. In addition, basic studies will definitely promote / help in publishing scientific article that will help you

to come in contact with people working in similar group.

In addition to focusing on the positive aspects of biological control of target pests, research on why and what could be the reason it is not giving satisfactory results are also equally important, which are also to be looked into/researched.

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