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A Life in Service of Entomology and Horticulture – Dr. N.K. Krishna Kumar

Dr. N.K. Krishna Kumar (NKK), fondly known by his initials among peers and students, was born on 5 September 1955 in Mysuru, Karnataka, to Mr. N. Kothanda Raman. Over the course of nearly five decades in entomology, he has earned respect as both a pioneering researcher and a capable administrator, as well as an inspiring orator. His firm grounding in biochemistry and statistics enriched his scientific approach, allowing him to design impactful projects and mentor a generation of Ph.D. scholars.

Dr. Kumar completed his B.Sc. (Agriculture) in 1975 and M.Sc. (Agriculture – Entomology) in 1978 at the University of Agricultural Sciences (UAS), Bengaluru. He later pursued a Ph.D. at the University of Hawaii, USA (1989–1993) under the guidance of Dr. Diane Ullman, a global authority on thrips–tospovirus interactions. His academic journey continued with a post-doctoral fellowship at the University of California, Davis (2003–2004), even as he served as Principal Scientist at ICAR-IIHR, Bengaluru.

Dr NKK in front of Mahatma
Gandhi statue at Coffee Board,
Balehonnur



Dr. N.K. Krishna Kumar is a distinguished entomologist, visionary administrator, and mentor whose pioneering contributions to horticultural pest management, vector–virus interactions, and biological control have shaped the course of Indian agriculture. From his formative years in rural Karnataka to his leadership of national and international research institutions, his career reflects a rare blend of scientific excellence, resilience, and a deep commitment to farmers' welfare. His journey is not only a chronicle of personal achievement but also a narrative of how Indian entomology and horticulture evolved over the last five decades.



Dr NKK with Dr Diane E Ullman, his mentor at University of Hawaii during his PhD during 1991



Dr NKK with his family during late 1990s

As a student, Dr. Kumar's scientific promise was recognized through several awards:

- **University of Hawaii Travel Grant (1991)** to present research at the International

Congress of Entomology, Beijing.

- **First Prize (1992)** from the Entomological Society of America (Pacific Branch) for his pioneering paper on thrips-spotted wilt virus interactions.
- **Award of Merit (1993)** from the Honor Society of Agriculture, Gamma Sigma Delta (Pacific Branch), along with a cash prize, for excellence in Ph.D. research.

At ICAR-IIHR, Bengaluru, Dr. Krishna Kumar specialized in insect-virus interactions, biological control, and host plant resistance. He led the Division of Entomology and Nematology for eight years before assuming directorship of the Project Directorate of Biological Control, which was later upgraded to the National Bureau of Agriculturally Important Insects (NBAIR). His research legacy covers vegetable entomology, integrated pest management (IPM) of sucking pests, and the study of insect vectors of plant pathogens. Initiatives like the Operational Research Project on Sucking Pests not only advanced knowledge but also trained young scientists from UAS Bengaluru and Kuvempu University, Shivamogga. Many of these researchers have gone on to make notable contributions in molecular vector entomology, insect systematics, and pesticide resistance.

After serving as **Deputy Director General (Horticulture)** at ICAR, Dr. N. K. Krishna Kumar joined **Bioversity International (2016–2020)**, a CGIAR institute. There, he spearheaded projects across South and Central Asia on managing Tropical Race 4 in banana, developing the Agrobiodiversity Index, and ecosystem service valuation. Dr. Kumar's prolific output includes over 110 research publications, as well as editing influential volumes such as *Advances in IPM for Horticultural Crops* and



Dr NKK with Dr CMKS during 2018 when NKK was in Bioversity International at New Delhi

The Onion (ICAR publication). His contributions have been recognized with prestigious honors including the Nammalvar Award for Biodiversity Conservation, the Dr. Vasanthraj David Award for Entomology, and Fellowship of the Society for Promotion of Horticulture. He continues to contribute actively as a member of several **Research Advisory Committees** and **Quinquennial Review Teams**, including those of the **Central Silk Board** and the **Indian Institute of Spices Research**, ensuring his expertise continues to guide Indian agriculture and entomology.

The following excerpts are from a conversation between **Dr. N.K. Krishna Kumar (NKK)**, an eminent entomologist and former DDG (Horticultural Science), ICAR, New Delhi and his former student **Dr. C.M. Kalleshwaraswamy (CMKS)**, Professor of Entomology at UAHS, Shivamogga. In this dialogue, Dr. Krishna Kumar reflects on his early influences, pioneering research, leadership roles, and his continuing commitment

to Indian agriculture.

CMKS: Sir, how did your journey from a UAS Dharwad undergraduate lead you to choose entomology as your career?

NKK: I chose agriculture because of my cousin, my aunt's son, who was a major influence in my life. He taught me English, guided my conduct, and inspired me to aim high. He worked in the Fertilizer Corporation of India, and on his advice, I joined B.Sc. Agriculture. I was awarded the ICAR Junior Fellowship for all four years. Initially, I wanted admission in Bengaluru as it was closer to Mysuru, but I got a seat at Dharwad – which turned out to be a blessing. The rural atmosphere, strict discipline under leaders like Dr. S.W. Mensinkai and Dr. S.V. Patel, and classmates from across Karnataka created a vibrant learning environment. Even after 50 years, my Dharwad batchmates remain

“Entomology appealed to me because it was practical, visual, and directly useful to farmers.”

a close-knit family. For my Master's, I moved to UAS Bengaluru, which had a strong presence of stalwarts in the

Department of Entomology. Teachers like Dr. C.A. Viraktamath, Dr. Jayaramaiah, Dr. G.K. Veeresh, and Dr. Lingappa shaped my passion. Entomology appealed to me because it felt practical, visual, and directly useful to farmers. Yes, it was challenging, but I loved it.

CMKS: Tell us a bit about your childhood.

NKK: I was born in Mysuru in a family of nine children – six sisters and three brothers. My father worked in a coffee curing company, and my mother was a devoted homemaker. We were not wealthy, but our home was full of music, especially Carnatic music, and intellectual discussions. I studied in Kannada medium until Class 7 and switched to

English medium in Class 8 – a tough transition. Our family valued education above all. While most of my siblings leaned toward physics and mathematics, I was drawn to biology. Although I could have pursued medicine, I chose agriculture, thanks to my cousin's influence.

CMKS: You completed your Ph.D. and a post-doc in the USA. What was your experience there, and how did it differ from India?

NKK: In the U.S., they mean business when it comes to science. There is no caste, no community bias, no gender discrimination – only merit. Once you enter a university, your subject becomes your life, 24/7. Teaching methods are independent yet supportive, guiding you step by step so that even challenging topics like statistics and biochemistry become engaging. I was awarded the East-West Center Pre-Doctoral Fellowship to pursue my Ph.D. at the University of Hawaii, Mānoa (1989–1993). Initially, I planned to work with Dr. Bruce Tabashnik, but I ended up under the mentorship of Dr. Diane Ullman – a teacher I regard as nothing short of a goddess. She molded me as a scientist and as a person, instilling honesty, compassion, and scientific rigor. My Ph.D. research focused on tomato spotted wilt virus (TSWV) and its transmission by thrips, as well as identifying resistant sources. I published in reputed journals such as *Plant Disease*, *Environmental Entomology*, *Journal of Economic Entomology*, and *Euphytica*. I also gained proficiency in advanced techniques like electron microscopy and microtomy. After my Ph.D., I was invited for a post-doctoral fellowship at the University of California, Davis, once again working with Dr. Ullman. There, I studied the role of viral glycoproteins in thrips acquisition of TSWV, virus replication, and transmission efficiency. The work was deeply satisfying, leading to several quality

publications. Though they wanted me to continue, family responsibilities drew me back to India after a year.

CMKS: How about your work experience in a private company before joining ICAR?

NKK: In those days, postgraduate students were recruited as Research Assistants in universities, but such positions were scarce. My family needed financial support, so I had to postpone my Ph.D. plans. Even before completing my degree, I got a job at Ciba-Geigy India Ltd. (later Novartis) as a Research Assistant. Initially, I was posted in Mumbai. The salary was good, but I was not happy with the work culture. The focus was heavily on marketing, and many in leadership positions were not agricultural graduates – they didn't always appreciate the value of scientific methodology or statistical analysis. During my time there, I witnessed large-scale aerial spraying of endosulfan in Kasargod and Goa in 1977–78. I had no idea then that endosulfan would later become a major environmental controversy. After a year, I resigned and began preparing for the Agricultural Research Service (ARS) examination, determined to join ICAR.

CMKS: Sir, how about your career research experience as a young ICAR scientist? What were your Master's days and your early years like at IIHR?

NKK: My M.Sc. research under Dr. Devaraj Urs was on chemosterilants. The learning environment — seminars, peer competition, and excellent faculty — shaped me immensely. I cleared the ARS exam in 1978 and was selected by Dr. T.N. Ananthakrishnan, joining ICAR-IIHR, Bengaluru. Initially, I worked on okra ecology and later led the vegetable entomology section. In 1985, I was transferred to Godhra,

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Gujarat, which at first felt unjust. Thankfully, the then Director, Dr. T.R. Subramanyam, recognized this and brought me back to IIHR. That brief stint in Godhra, however, gave me valuable field exposure to her pests. At that time, IIHR had a policy that discouraged study leave, which I found puzzling. After more than a decade, I finally got my application forwarded for the East-West Center Fellowship, and among thousands of applicants, I was selected to pursue my Ph.D. in Hawaii.

CMKS: Your contributions to horticultural entomology are widely known. Could you highlight some milestones?

NKK: At ICAR-IIHR, I worked extensively on insect-virus interactions, biological control, and host plant resistance. I headed the Division of Entomology and Nematology for eight years, before moving to the Project Directorate of Biological Control (later NBAIR). A landmark initiative was the Operational Research Project on Sucking Pests, which trained young scientists at UAS Bengaluru and Kuvempu University, Shivamogga. This fostered work on molecular virus transmission, insect systematics, and pesticide resistance, resulting in quality publications.

CMKS: How was your transition from scientist to administrator?

NKK: Serving as Director of the Project Directorate of Biological Control (later NBAIR) allowed me to expand biological control programs nationally. Later, as Deputy Director General (Horticulture) at ICAR, I could shape policies and research direction for horticultural crops across the country. Following

ICAR, I joined Bioversity International (2016–2020), a CGIAR institute. There, I led research in South and Central Asia on banana Tropical Race 4 management, development of the Agrobiodiversity Index, and valuation of ecosystem services.

CMKS: You also headed the National Bureau of Agriculturally Important Insect Resources (NBAIR), which was earlier focused on biological control. What transformations did the institute see under your leadership?

NKK: Before becoming Director of NBAIR (then PDBC), I was Head of the Division of Entomology and Nematology at IIHR. There, I played a role in the commercialization of horticultural technologies – raising the institute’s annual revenue from just ₹2 lakh to over ₹1.5 crore. I took charge of NBAIR in June 2011, succeeding Dr. R.J. Rabindra. With the strong support of my scientific team, we made major infrastructure upgrades: establishing new laboratories, enhancing field facilities at the Yelahanka farm, renovating the guesthouse, and relocating the library into a dedicated building. We also hosted what I believe was the largest entomology gathering in India since Independence, with over 300 entomologists participating. On the research side, our biological control programs against papaya mealybug, eucalyptus gall wasp, and erythrina gall wasp delivered measurable impacts. These efforts continued the legacy of my predecessor, while also bringing several projects to full scientific and field-level fruition.

CMKS: You were a proven administrator as well, heading ICAR as Deputy Director General (Horticultural Sciences). What was that experience like, especially working with Dr. Ayyappan?

NKK: Honestly, I sometimes feel I could have stayed longer at NBAIR. But when the post of DDG (Horticulture) was advertised, I decided to apply. Initially, I didn't even get the interview call. Then, just 48 hours before the date, the call arrived – perhaps divine timing! The selection committee included stalwarts like Dr. K.L. Chadha, who was known for preferring horticulturists for this role. Yet, despite tough questioning, they unanimously selected me – breaking the long-standing tradition of appointing only horticulturists. In Delhi, my fluency in Hindi helped me connect well with colleagues such as Dr. G. Kalloo, Dr. H.P. Singh, Dr. Ghosh, and Dr. Chadha. Together, we achieved several milestones: establishing the Floriculture Institute at Pune, launching a phytoplasma research network, and introducing targeted funding for crucial horticultural projects. My tenure coincided with the leadership of Dr. S. Ayyappan, a simple, honest, Gandhian-minded Director General. Together, we witnessed a proud national milestone: India's horticulture production surpassing foodgrain production.

CMKS: After retiring from ICAR, you joined Bioversity International. How have you been engaged since then?

NKK: I joined Bioversity International in 2016, just before completing my tenure as DDG. It's a CGIAR

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institute, and I coordinated research across South and Central Asia – focusing on managing Tropical Race 4 of banana, developing an Agrobiodiversity Index, and valuing ecosystem services. In 2020, during the COVID-19 pandemic, I stepped down from Bioversity International. I briefly consulted

for a Japanese company, and today I serve as Scientific Advisor to Indo-American Hybrid Seeds, Bengaluru. I also contribute actively to the scientific community – serving on Research Advisory Committees of several ICAR institutes and the Central Silk Board, and chairing the QRTs for the All-India Network Projects on Soil Arthropod Pests and Agricultural Acarology.

CMKS: Finally, what advice would you give young people aspiring to specialize in entomology?

NKK: Work hard – it always pays off. Never look back with regret, and avoid shortcuts. Master your basics – statistics, biochemistry, ecology – because they form the foundation of good science. Above all, be honest, truthful, and simple in life. If you are a teacher, encourage your students. They are the future, and it's our duty to shape them into responsible citizens. Agriculture remains the backbone of our country, and India needs its brightest minds to contribute to its growth.

Editor's Note

Dr. N.K. Krishna Kumar's life exemplifies the spirit of Indian agricultural science combining rigorous research, visionary leadership, and a deep commitment to farmers. His journey remains an inspiration for generations of scientists.

The above conversation between **Dr. N.K. Krishna Kumar (NKK)** and his former student **Dr. C.M. Kalleshwaraswamy (CMKS)** took place during the *Capacity Building Programme on Taxonomy of Termites*, held from **14–21 July** at the Department of Entomology, **College of Agriculture, Keladi Shivappa Nayaka University of Agricultural and Horticultural Sciences (UAHS), Shivamogga, Karnataka**. Dr. C.M. Kalleshwaraswamy, who conducted the interview,

is a **Professor of Entomology at UAHS**, specializing in **insect taxonomy and vector-entomology**. He also serves as the **Chief Editor of *Hexapoda***, a journal published by the Entomological Society of India.

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