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Top Ten Horticultural Scientists of India: Their Scientific Contributions, Innovations, and Legacy

(Arranged alphabetically according to surnames)

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Introduction

Indian horticulture has witnessed remarkable growth over the past century due to the pioneering contributions of several visionary scientists whose research, innovations, and leadership transformed the sector into a major component of Indian agriculture. This article highlights the life, achievements, and scientific contributions of ten eminent Indian horticultural scientists who have significantly influenced fruit, vegetable, plantation, spice, ornamental, and biotechnology-based horticultural research. These scientists include Prof. Krishna Lal Chadha, regarded as the Father of Modern Horticulture in India; Prof. Gautam Kalloo, an internationally recognized vegetable breeder; Prof. Chittaranjan Kole, a pioneer in plant biotechnology and agri-nanotechnology; Prof. Sobhan Kumar Mukherjee, renowned for his pioneering work in mango breeding and taxonomy; Dr. V. A. Parthasarathy, noted for his contributions to spices, plantation crops, and biotechnology; Prof. K. V. Peter, an eminent vegetable scientist and administrator; Prof. Hari Har Ram, a distinguished vegetable breeder and educator; Dr. Harbhajan Singh, the “Indian Vavilov” and pioneer of plant genetic resources; Prof. Kirti Singh, an outstanding horticultural educator and administrator; and Dr. Surinder Kumar Tikoo, an internationally acclaimed vegetable breeder and research leader. Their collective contributions encompass crop improvement, germplasm conservation, plant breeding, biotechnology, horticultural education, institutional development, policy formulation, and international collaboration. Through the development of improved crop varieties, establishment of research institutions, conservation of genetic resources, and advancement of modern breeding technologies, these scientists laid the foundation for India's horticultural revolution and strengthened the country's food, nutritional, and livelihood security. Their achievements continue to inspire future generations of researchers and serve as a benchmark for excellence in horticultural science and innovation.

1. Prof. Krishna Lal Chadha (1936-2025):



Dr. Chadha, known as **Father of Modern Horticulture in India**, obtained his B.Sc. (Ag.)and M.Sc. (Horticulture) degrees in 1955 and 1960, respectively from the Punjab University, Chandigarh and Ph.D. (Horticulture) in1965 from IARI, New Delhi. His research pertains to the fruit crops'nutrition, use of plant growth regulators, and crop improvement in important fruit crops such as mango, grape, pineapple, citrus, and stone fruits. He is credited with establishing the Central Mango Research Station (now renamed as the ICAR-Central Institute for Subtropical Horticulture) at Lucknow from scratch, and with giving a new direction to fruit research programmes under the All-India Coordinated Fruit Improvement Project. He was an Assistant Horticulturist, IARI (1963-64); Fruit Specialist, Punjab Agricultural University, Ludhiana (1964-69); Project Co-ordinator (Fruits) and Head, Central Mango Research Station, Lucknow (1972-80); and Director,Indian Institute of Horticultural Research (IIHR), Bangalore (1980-86); first Horticulture Commissioner, Government of India and Executive Director, National Horticulture Board, New Delhi (1986-87); first Deputy Director General (Horticulture), Indian Council of Agricultural Research (1987-96); ICAR-National Professor (Horticulture) at IARI (1997-2001); and Adjunct Professor, IARI (2010-17). He added a wealth of information through several publications (30 books and bulletins), including 'Advances in Horticulture' — a monumental publication in 13 volumes covering 9,410 pages. He also brought out a Handbook of Horticulture, published by ICAR, parallel to Handbook of Agriculture. In the words of Dr. M.S. Swaminathan, "Dr. K.L. Chadha has provided outstanding leadership to horticultural renaissance of India — he has rendered invaluable service for which we are all very grateful" a phenomenon which has led to the Horticulture (Golden) Revolution in India. He has been honoured with Borlaug Award (1984); Om Prakash Bhasin Award (1992); Dr. H.M. Marigowda Award for Best Horticultural Scientist (1996); S.K. Mitra Memorial Award (1998); S.S. Ranade Memorial Life

Time Achievement Award (1999); First HSI-Shivashakthi Life-Time Achievement Award (2007); National Agriculture Leadership Award, Agriculture Today for Life Time Achievement (2008); Padma Shri (2012); Krishi Shiromani Samman, Mahindra & Mahindra Pvt.Ltd. (2014) and Life Time Achievement Award during International Dialogue on Indian Viticulture (2019). He was awarded D.Sc. (*Honoris Causa*) by C.S. Azad University of Agriculture and Technology, Kanpur, U.P. (1995), Odisha University of Agriculture and Technology, Bhubaneswar, Odisha (2008), and Rajendra Prasad Agricultural University, Pusa, Samastipur, Bihar (2009).He was a Fellow of The Horticultural Society of India, Indian Society of Vegetable Science, International Society of Horticulture Science, Netherlands, andNational Academy of Agricultural Sciences. He was President, Horticultural Society of India (now Indian Academy of Horticulture Sciences), Indian Society of Agriculture Sciences, Mushroom Society of India, Indian Society of Ornamental Crops, Orchid Society of India, and Bougainvillea Society of India; Vice-President, Indian Society of Vegetable Sciences, Rose Society of India, and National Academy of Agricultural Sciences (2000-02); Chief Patron, Association for Improvement in Production and Utilization of Banana, and All India Kitchen Garden Association; Member and Vice-Chairman, Board of Trustee, International Potato Centre (CIP), Lima, Peru; Chairman, Indian Society of Agribusiness Professionals (ISAP), and Indian Agribusiness Systems Pvt. Ltd. (Agriwatch), New Delhi (2007-08); Chairman, Institute of Horticulture Technology, Greater Noida (2010 onwards); Member, Editorial Board, Commonwealth Agriculture Bureau, London; Consultant to FAO, USAID, World Bank and IPGRI. He has been consultant to several international agencies such as FAO for fruit production in eight countries of Asia, genetic resources in Thailand, USAID on mango production to Horticultural Export Improvement Association, Cairo, Egypt; Biodiversity International (former IPGRI) on genetic resources in citrus, mango and sub-tropical fruits and World Bank on nursery production of horticulture and forestry species.

2. Prof. Gautam Kalloo (b.1944):



Professor Kalloo is a distinguished horticulturist and vegetable breeder known for his significant contributions to vegetable research particularly in tomato breeding. He obtained his M. Sc. (Ag.) and Ph. D. (Genetics and Plant Breeding) from BHU in 1966 and 1969, respectively and Post-Doctorate from Technical University, Hannover, Germany in 1977-78. He is credited with the development and release of over 50 varieties of various vegetable crops, including tomato, brinjal, and spices, with a major focus on breeding for disease resistance. He was Assistant Vegetable Botanist, Vegetable Breeder, Sr. Vegetable Breeder, and Professor and Head (Vegetable Science), Haryana Agricultural University, Hisar (1969-1991); Project Director, Project Directorate of Vegetable Research, Varanasi (1991-2000); Director, Indian Institute of Vegetable Research, Varanasi (2000-2001); Deputy Director General- Horticulture(2001-06) and also Deputy Director General (Crop Science) as additional charge (2003-06), Indian Council of Agricultural Research; and Vice Chancellor, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, Madhya Pradesh (2007-12). He edited/authored several important books in the area of vegetable breeding, *viz*, Vegetable Breeding, Distant Hybridization of Crop Plants, Genetic Improvement of Vegetable Crops, Genetic Improvement of Tomato, and Vegetable Breeding, Volumes 1-3. He received the Rafi Ahmed Kidwai Award (2001-02); ICAR Team Research Award (1991-93); Dr. H. M. Marigowda National Award (2001); Dr. Harbhajan Singh Award (1990); D.Sc. (*Honoris Causa*) from Banaras Hindu University (2005), and Odisha University of Agriculture and Technology (2012); Lifetime Achievement Award by High-tech Horticultural Society (2012); and Plant Science Colloquium HAU, Hisar Award. He was President, Indian Society of Vegetable Science, Indian Society of Seed Technology, Haryana Society of Horticultural Sciences, and Indian Society of Oilseeds. He is a fellow of the Indian Society of

Vegetable Science, the Indian Society of Genetics and Plant Breeding, the Indian Society of Plant Genetic Resources, and National Academy of Agricultural Sciences.

3.Prof. Chittaranjan Kole (b. 1954):



in India' and the **'Father of Agri-Nanotechnology in the world'**. Prof. Kole obtained his B. Sc. (Ag.), M. Sc. (Genetics and Plant Breeding)and Ph.D. (Genetics and Plant Breeding)from Bidhan Chandra Krishi Viswavidyalaya. He did his post-doctorate research in the USSR Academy of Sciences, Moscow on Molecular Genetics and Genetic Engineering. As theFounder Principal Investigator of the Laboratory of Molecular Biology and Biotechnology in Odisha University of Agriculture and Technology, he established two large germplasm banks of citronella and lemongrass and developed six hardy and high-oil yielding varieties in citronella. Here, in collaboration with the Department of Horticulture, he conducted molecular characterization in a country bean germplasm. During this time, he demonstrated the antimicrobial efficacy of essential oils from several medicinal and aromatic plants and their constituents. His team also mapped a gene controlling self-incompatibility in *Brassica rapa* and compared it to the corresponding gene of *Brassica oleracea*. As a DBT Overseas Research Associate at the University of Wisconsin at Madison, USA, he constructed a molecular map in *Brassica rapa* and used this as a framework to map a number of genes including resistance to white rust, seed colour and leaf pubescence and QTLs underlying flowering time and white rust resistance. He used this map also for comparative mapping with *Brassica napus* and *Arabidopsis thaliana.* Later on, he Mendelized a flowering time QTL, compared its location to the flowering time gene *FLC* of *Arabidopsis thaliana* and demonstrated the pathway of molecular evolution of polygenes from a single Mendelian gene. In collaboration with the Department of Horticulture there, he detected several QTLs controlling winter survival and freezing tolerance and compared

their positions to corresponding genes and QTLs of *Brassica napus* and *Arabidopsis*. All these reports by him were first as an Indian and many of them also being first by any scientist in the world. While visiting the Pennsylvania State University, USA, Department of Horticulture, he mapped an R-gene controlling resistance to late blight in tomato using a wild tomato species as the donor parent. After moving from there to the Clemson University, USA, he established a large germplasm of cultivated and wild bitter gourd and developed eight varieties rich in anticancer and antidiabetic phytomedicines by using the wild bitter gourd accessions. He employed association mapping in bitter gourd and detected AFLP markers linked to several fruit traits and phytomedicine contents. He also constructed a molecular map in bitter gourd and mapped many important genes and QTLs. As the Director of Research of the Institute of Nutraceutical Research at Clemson, he also demonstrated spectacular improvement in fruit yield, biomass and content of anticancer and antidiabetic phytomedicines in bitter gourd by employing nanotechnology. Again, all these achievements were first in the world. At Clemson University, he was also in a team for genetic linkage mapping for molecular dissection of chilling requirement and bud break in apricot. While acting as the Chairman of Prof. Chittaranjan Kole Foundation for Science and Society, he has been involved in sequencing a high-quality *Momordica balsamina* genome. While working as a Raja Ramanna Fellow of the Government of India at the ICAR-National Institute for Plant Biotechnology, he led a group of scientists in analysing the chromosome-level *de novo* genome assemblies of as many as 114 plant species that included many horticultural plants. He also contributed to the identification of circ-RNAs in the *Cannabis sativa* genome and examination of their association with 28 cannabinoids in three tissues, nine of these circ-RNAs being potentially involved in the biosynthesis of six cannabinoids. He also guided a team of scientists for clonal micropropagation of Indian gooseberry. He worked at several prestigious academic positions including Vice-Chancellor of the Bidhan Chandra Krishi Vishwa Vidyalaya, Mohanpur, Nadia, West Bengal and the Founder Director of the Regional Nuclear Agriculture Research Centre there; Dean of the Jacob School of Biotechnology and Bioengineering at the Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad; and Founder Project Director of the Indo-Russian Centre for Biotechnology at Indian Institute of Information Technology, Allahabad. Prof. Kole has edited over 200 books on plant genetics, genomics, breeding and biotechnology out of which over 80 books are dedicated directly to the horticultural crops. He had a large number of national and international awards

and fellowships in recognition of his outstanding contributions including Outstanding Crop Scientist Award by the International Crop Science Congress; Honorary Fellow and Distinguished Professor of the Henan Academy of Agricultural Sciences, China; Agri-Genomics Pioneer Gold Medal Award; Dr. Norman Borlaug International Agri Leadership Award; Nano-Biotechnology Pioneer Gold Medal;Honorary Fellow of the Indian Academy of Horticultural Sciences, CHAI-Honoured Fellow Award and several life-time achievement awards. He acted/acts as an expert for many funding agencies including NSF, USDA and USAID of USA, Genome British Columbia and European Innovation Council. In India, he has served as Chairman or member in many committees of ICAR and DST. Prof. Kole is a globally celebrated renowned science leader. He has been contributing to sciences as the Founder President of Genome India International, International Climate Resilient Crop Genomics Consortium, and International Phytomedomics and Nutriomics Consortium; the last one is directly in the field of horticultural sciences.

4.Prof. Sobhan Kumar Mukherjee (1914-2006):



Prof. Mukherjee was an eminent pomologist and cytogeneticist at the Indian Agricultural Research Institute, New Delhi, widely recognized for his path-breaking work in mango breeding, taxonomy, and germplasm classification. While often cited for his seminal contributions to the understanding of the origin, distribution, and phylogeny of the genus *Mangifera* (mango), his role at IARI was instrumental in the scientific study of mango improvement. He conducted extensive research on the botanical classification and phylogenetic relationships of *Mangifera* species. His work remains a primary reference for understanding the evolution and diversity of the mango. At IARI, he played a significant role in developing and formalizing systematic mango hybridization and breeding program. Mukherjee (1950, 1953) investigated the cytology,

pollen morphology, and taxonomy of the mango and allied species, classifying them and highlighting their heterozygosity.In 1961, Dr. Mukherjee, along with P.K. Majumder and S.S. Chatterjee, developed an improved technique for mango hybridization. This technique, which involved specific bagging methods, improved the success rate of controlled crosses.He contributed to the evaluation and development of promising mango hybrids, addressing the problem of alternate bearing in popular cultivars like Dashehari and Langra. He is often cited in studies regarding the inheritance of growth habits and fruit characters in mangoes, including the evaluation of hybrids like Neelam x Chausa.He was involved in the survey, collection, and conservation of mango germplasm, including the study of the origin of mango. His early studies on pollen morphology and taxonomic relationships provided the scientific framework that subsequent mango breeders at IARI and other institutes (such as Central Institute of Sub-Tropical Horticulture, Lucknow and Indian Institute of Horticultural Research, Bangalore) have built upon for decades. His key publications include: The Mango—Its Botany, Cultivation, Uses and Future Improvement, Especially as Observed in India (*EconomicBotany*, 1953); An Improved Technique of Mango Hybridization (*Indian J. Hort*., 1961); Present Position Regarding Breeding of Mango (*Mangifera indica* L.) in India (*Euphytica*, 1968); and Origin of Mango, *Mangifera indica* (*Economic Botany*, 1972). He was a prominent figure in international horticultural forums, often serving as a Chairman or Keynote Speaker on the subject of mango genetic resources and improvement.

5. Dr. V. A. Parthasarthy (b.1949):



Dr. Parthasarthy born in Tamil Nadu, obtained his B. Sc. Ag.from TNAU, Coimbatore and M. Sc. and Ph. D. degrees from Annamalai University, Tamil Nadu. He didhis Post Doctoral Research in Biotechnology at Aberdeen University, UK andanother at Tuskegee University, USA.Hewas also Emeritus Scientist of ICAR; Adjunct Professor at IARI, Sri Konda Laxman Telangana Horticultural University (SKLTSHU), (Telangana), TNAU and BAU,Sabour.Formerly Director, Project Coordinator (Spices) andEmeritus Scientist at Indian Institute of Spices Research, Calicut, he is a well knownhorticultural scientist with an experience spanning for about 4 decades. He was also the Country Coordinator(Bioversity International) for two projects, namely, COGENT (Coconut) andTropical fruits. He served ICAR in various capacities, namely, Head, Division ofHorticulture, ICAR Research Complex, Barapani, Head, Division of CropImprovement, Central Plantation Crops Research Institute, Kasaragod, Project Coordinator (Spices) and Director, Indian Institute of Spices Research, Calicut. He was instrumental in developing a paperless office system at IISR wayback in 2004 and it was the first institute to have gone paperless. Under hisdynamic leadership, IISR bagged the Sardar Patel Award for best Institute for thesecond time. The system of office automation developed is still robust andsuccessfully used till date. He established the first World Coconut Gene Bank atCPCRI and the team under his leadership won the best Team Research Award ofICAR for his efforts in establishing the international coconut gene bank withworld's largest collection of coconut germplasm. His major contributions were inthe tribal region of North East at ICAR Research Complex for NEH Region,Barapani, India where he served for about two decades for which he wasawarded the Life Time Achievement Award. He was also awarded Life Time Achievement Award in Horticulture by TNAU in 2024. He has been conferred with Lifetime Achievement Award by six professional societies.He was member of ICARGoverning Body as well as ICAR Standing Finance Committee. He is currently Chairman/member of many QRTs and RACs of ICAR institutes.He was the President of National Academy of Biological Sciences of India andwas the Past President of Indian Society of Spices. He was the executive councilor of Horticultural Society of India and Indian Society of Citriculture. He isthe Fellow of many Indian societies He made significant contributions in the fieldof biotechnology and breeding of a range of horticultural crops. A very uniquefeature of the experience of Dr.Parthasarathy has been his experience in mostall horticultural crops such as fruits, vegetables, plantation crops and spices. Hehas the experience of hill horticulture as well as the coastal horticulture. He has guided

12Ph.D.Scholars and published over 250 research papers, over 120 reviews/chapters in books besidesmany invited lectures. He has edited/authored about 60 books.

6. Prof. Kuruppacharil V. Peter (1948-2022):



Prof. Peterobtained his B. Sc. Ag. from Agricultural College and Research Institute, Trivandrum and Masters and Ph. D. in Horticulture from G. B. Pant University of Agriculture and Technology, Pantnagar. He worked on various aspects of horticultural sciences for over 35 years and made significant contributions to the field of horticultural sciences. He is associated with the development and release of several improved and high-yielding cultivars/hybrids in tomato, brinjal, chilli, bitter gourd, melons, amaranths, and cowpea. Sources of resistance to bacterial wilt in tomato, chilli, and brinjal; aphids in cowpea; and viral leaf curl in chilli were identified by him and are now used in vegetable breeding programmes. He was associated with the development of biotic stress-resistant cultivars in chilli (Pant-C1), tomato (Sakthi), and brinjal (Surya). Prof. Peter provided managerial support to the Indian Institute of Spices Research, Kozhikode, Kerala, to establish the world's largest germplasm of black pepper and cardamom. He was Assistant Professor, GBPUAT, Pantnagar(1975-1979); Professor of Horticulture, KAU (1979-2008); Director, Indian Institute of Spices Research, Kozhikode, Kerala (1991-1999); Director of Research, Kerala Agricultural University (1999-2001); and Vice-Chancellor, Kerala Agricultural University (2001-2006). He worked as a Postdoctoral Fellow in the Vegetable Laboratory at the Beltsville Agricultural Research Centre, Beltsville, MD, USA. He has been a prolific writer and academic editor. He has authored/edited 75 books. He is a recipient of Dr Harbhajan Singh Award (1993), Rafi Ahmed Kidwai Award (1996-1998), Silver Jubilee Medal (1998), Silver Jubilee Memento (1998), Dr. M.H. Marigowda National Award (2000), National Award for Processing and Product Development, DBT (2003), HSI-Shivasakthi Lifetime Achievement Award of Indian Academy of Horticultural Sciences (2008), and The PNASF National Gold Medal Award for best scientist (2009). Prof. Peter was elected a fellow of prestigious societies, *viz*., National Academy of Agricultural Sciences, New Delhi; National

Academy of Sciences, Allahabad; Indian Society of Genetics and Plant Breeding, New Delhi; Indian Society of Vegetable Sciences, Varanasi; National Academy of Biological Sciences, and Horticulture Society of India. He was Director, World Noni Research Foundation, Chennai (2007-2022).

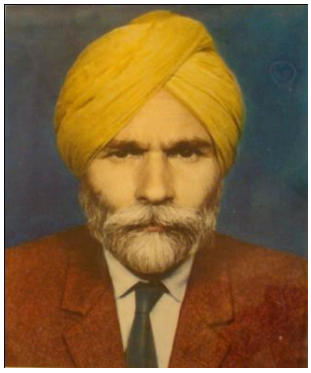
7. Prof. Hari Har Ram (b.1948):



He completed his Masters and Ph. D. in Plant Breeding from the G.B. Pant University of Agriculture and Technology, Pantnagar in 1969 and 1973, respectively with an excellent academic performance and did post-doctoral research at Goettingen University,Germanyfrom 1977-78,released and commercialized 74 cultivars and hybrids of major vegetables and soybean while serving at the G.B.P.U.A.T., Pantnagar, and Krishidhan Vegetable Seeds India Pvt. Ltd., Pune. He taught many courses including Plant Genetics and Advanced Vegetable Breeding to the postgraduate students and conducted research on breeding, genetics and seed production of vegetables and soybean at G.B.P.U.A.T., Pantnagar. He served at G.B.P.U.A.T., Pantnagar, in various capacities, starting as an Assistant Professor and ending as Professor and Founder Head, Department of Vegetable Science, Programme Coordinator-Vegetable Research, Coordinator-Seed Science and Technology, General Manager-Seed Production at the University Farm, and Nodal Officer, Pantnagar Centre for Plant Genetic Resources, a World Bank funded project. He headed product research and development division as Vice-President and coordinated research on breeding of major vegetable crops such as hot pepper, tomato, okra, eggplant, gourds, cucumber, onion, peas, and beans at the Krishidhan Vegetable Seeds, Pune from 2006 to 2014. He has guided 25 Masters and 26 Ph. D. students at Pantnagar. In addition to more than 250 research papers in journals and seminar proceedings, he has authored and edited 24 books, out of which Vegetable Breeding: Principles and Practices, Crop Breeding and Biotechnology, Vegetable Seed

Production: Principles and Practices, Genetic Resources and Seed Enterprises, Principles of Plant Breeding, Plant Breeding and Genetics, Commercial Plant Breeding Volume 1: Vegetable Crops, and Commercial Plant Breeding Volume 2: Field Crops are being used by the students in Agricultural Universities and crop breeding professionals. He has been recognized as outstanding scientist by the G.B.P.U.A.T.,Pantnagar for significant contributions in the field of vegetable science (2004), awarded Horticultural Society of India Gold Medal for contribution and leadership in Vegetable Science (2005), awarded recognition certificate for developing landmark varieties of soybean during Platinum Jubilee Celebrations by Indian Society of Genetics and Plant Breeding (2017), and honoured with best teacher award for outstanding contribution in the field of horticulture teaching during Indian Society of Horticulture Research and Development-Horticulture Conclave-2019. He is a Fellow of the Indian Society of Vegetable Science and the Indian Society of Genetics and Plant Breeding. He worked as an FAO Consultant (Myanmar, Libya, and DPR Korea) in the field of plant breeding, vegetable breeding and seed production; Consultant, National Horticulture Board, Gurgaon; Consultant, U.P. Council of Agricultural Research, Lucknow; Consultant, Dayal Seeds, Meerut; Consultant, Agriculture Projects, Tata Trusts, Lucknow; and Consultant, Jain Irrigation Systems Ltd, Jalgaon.He has served as member in several Research Advisory Committees and Quinquennial Review Teams of ICAR. He has travelled abroad extensively on fellowships and invitations and visited countries in Western Europe including Cambridge University, Plant Breeding Institute, Cambridge; South East Asia including Asian Vegetable Research and Development Centre (now World Vegetable Centre, Taiwan), Latin America including Central Institute of Tropical Agriculture, Cali Colombia, and North Africa and Mongolia.

8. **Dr. Harbhajan Singh (1914-1974):**



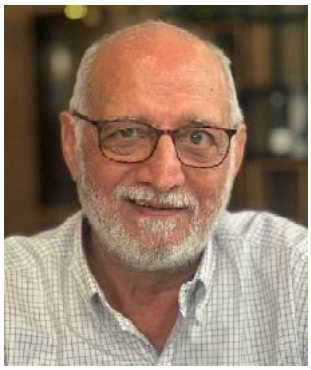
Dr. Singh was the most distinguished plant explorer, renowned as the "Indian Vavilov" after Russian Botanist, Nikolai Vavilov. He imparted a distinct identity to the discipline Plant Genetic Resources in India. Born at Pusa, Bihar he received early education at Kharar and Amritsar. Dr. Singh post-graduated in Botany from Agra University and then completed Diploma course of Associateship in Economic Botany from Imperial Agricultural Research Institute (now Indian Agricultural Research Institute). He later joined Division of Botany, IARI as regular research staff. Later, he adorned the position of Head of Plant Introduction Division of IARI with great distinction, taught and guided many postgraduate students with an unusual blend of scientific and human qualities. Dr. Singh introduced large number of germplasm of wheat and rice that worked as the foundation to the Green Revolution in India. He also introduced several new species such as soybean, sunflower, low chilling and temperate fruits (peaches, apples, West Indian cherry, Chinese gooseberry) and a wide range of ornamentals and vegetable crops. He also made outstanding contributions to the field of vegetable breeding, Pusa Sawani cultivar of okra being the crowning example. Further, he was instrumental in importing and commercializing several outstanding lines of tomato, cabbage, vegetable pea, etc. His contributions to the field he loved most have been multifarious. He organized a number of systematic explorations and evaluation programmes in India and abroad. Dr. Harbhajan Singh published over 130 research papers, bulletins, monographs and popular articles. He served as consultant to several organizations and represented the country in international fora. The President of India conferred on Dr. Singh the Padma Shri award in 1971. Punjab Agricultural University decorated him with the degree of Doctor of Science (*Honoris Causa*). Dr. Singh believed and worked relentlessly with the firm conviction that example is better than percept. He was a human being *par excellence* and pioneer in the field of plant genetic resources including horticultural crops and was an outstanding plant breeder with focus on vegetable crops.

9. **Prof. Kirti Singh (1934-2023):**



Prof. Singh, an agronomist of eminence, made significant contributions in the development of several varieties and developed various agronomic practices in vegetable crops. He was Scientist Pool Officer (1962-63); Vegetable Specialist, J & K, Srinagar, (1963-65); Associate Professor/Vegetable Botanist, Punjab Agricultural University, Ludhiana/Hisar (1965-70); Professor and Head, Department of Vegetable Crops, Haryana Agricultural University, Hisar (1970-77); Dean of Agriculture (1977-84) and Vice-Chancellor (1984-89), Narendra Dev University of Agriculture and Technology, Faizabad (U.P.); Vice-Chancellor, Himachal Pradesh Agricultural University, Palampur (1989-93); Vice-Chancellor, Indira Gandhi Agricultural University, Raipur (1993-95); Member (1995-98) and Chairman (1998-99), Agricultural Scientists Recruitment Board (ASRB), New Delhi. He received the Leonard Vaughan Award of the American Society of Horticultural Science (1961); Award of Seedsmen and Nurserymen Association of India (1991);R&D Linker Award of Indian Society of Extension Education (1991);Horticultural Society of India Gold Medal (1993); NeichandShrishrimal Abhinandan Award (1995); D.Sc. (*Honoris Causa*), TNAU (2000); PNSAF Gold Medal (2002); Dr. M. S. Randhawa Memorial Award (2001-02); Purvanchal Ratna Award (2003); HSI-Shiv Shakti Life Time Achievement Award (2007); and World Wellness Open University Life Time Achievement Award (2008). He was a fellow of the National Academy of Sciences, India; the Indian Potato Association; the Indian Society of Vegetable Science; the Horticultural Society of India; and the National Academy of Agricultural Sciences. He was President, Indian Society of Vegetable Science, and Senior Vice-President, Horticulture Society of India. He was President, International Society for Noni Science (2010); Chairman, World Noni Research Foundation; Advisor, Government of Nepal for Establishment of Agricultural University (1995) and FAO Consultant in Cambodia (1999).

10.Dr. Surinder Kumar Tikoo (b. 1948):



Dr. Tikoo is a distinguished plant breeder, educator, and research and development leader with over 57 years of experience spanning both public and private sectors. A highly accomplished vegetable breeder, he has developed several market-leading tomato varieties and hybrids for India, Turkey, and the USA, as well as successful okra hybrids for India. As an academic, Dr. Tikoo served on the faculty of the University of Agricultural Sciences, Bangalore (1978–1988). He has held several senior leadership roles, including Global Vegetable Research Lead and member of the Global Management Committee at Advanta; member of the Global Vegetable Development Leadership Team and APAC Product Development Lead at Syngenta, including four years at their Seoul, South Korea base; Global Bush Tomato Lead at Pioneer; and Chief of the Solanaceous Crops Laboratory at ICAR–IIHR. He was also an FAO Fellow under the UNDP programme at the USDA Vegetable Laboratory, Beltsville, Maryland, USA (1982). His important publications include the books 'Market-Driven Plant Breeding for Practicing Breeders', and 'Okra: Status, Challenges and Opportunities'. He was awarded by APSA for special contributions to the development of their research goals as an RAC member in 2022 (member for over 10 years), awarded Excellence in Translational Research by SPBB and Springer in 2021, and conferred the Life Time Achievement Award for contributions in the field by KECSS (Kashmir Educational Culture and Science Society), New Delhi in 2016. He has served as a Chairman/Member in several scientific bodies and professional committees, including Member, Asia and Pacific Seed Association (APSA), Bangkok (2013–2021); Member, Supervisory Board, Access to Seed Index Foundation, Netherlands (2015–2021); Steering Committee Member and Chairman, Tech. Committee, ASRT-1 (APSA/WVC/IIHR, 2014). He is also the incumbent President of the Academy of Indian Horticulture. He was elected Fellow of the Society for Promotion of Horticulture, IIHR, Bangalore (2018). Dr. Tikoo has extensive international experience, having served as a consultant to the FAO on vegetable breeding and production in Myanmar (1997–1998).

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