

OBITUARY

Dr. Subrahmaniam Nagarajan (1945-2016)

Dr. Subrahmaniam Nagarajan was born on 7th November 1945 in Chennai, India. He studied in Chennai till high school and completed his early education at the Tamil Nadu Agriculture University, Coimbatore in 1966 and his Masters at the Indian Agriculture Research Institute, New Delhi in 1969. He received his doctorate in Plant Pathology from the Delhi University in 1973. His interest in Wheat rusts got aroused when he was working for his Ph.D. and his association with PL480 scheme during early seventies.



He made significant contributions to the Rust pathology and our understanding of wheat rusts and Karnal bunt. His publications on wheat rusts and Phytosanitary issues of Karnal bunt were lauded internationally. He became famous for Indian Stem Rust Rules, perpetuation, epidemiology of wheat rusts and NIL based system for the identification of wheat rust pathotypes in India. He designed models to calculate the yield losses and the movement of wheat rusts. He joined the Indian Agricultural Research Institute, New Delhi in 1974 as Wheat Pathologist. Later on, he shifted to IARI, Regional Station, Flowerdale, Shimla, H.P. and headed this station between September 29, 1980 to March 16, 1987.

After leaving Flowerdale, Dr. Nagarajan joined IARI as Leader of Wheat Pathology group in March, 1987. He continued his research interest on the epidemiology of the cereal rusts and inducing diversity for rust resistance. He inspired many to look for slow rusting, adult plant resistance of race specific and non-race specific nature. Wheat rusts have posed a serious threat to wheat crop in different parts of India and neighbouring countries. On the basis of a series of epidemiological investigations he propounded the stem rust rules and using climatic data explained the nature and recurrence of *Puccinia graminis tritici* and *P. triticina*.

These rules suggested that the urediospores originating from the Nilgiris spread to Central India under the influence of tropical cyclone that occurs in the Bay of Bengal during November i.e. *Puccinia* Path was deciphered by Dr Nagarajan. Based on this, a disease management strategy was formulated and implemented to contain crop losses. On a similar basis he and his team explained the nature and recurrence of the leaf rust (*P. triticina*) and the stripe rust (*P. striiformis*) over the Indo Gangetic plains. He proposed a new Near Isogenic lines based binomial system for wheat rust pathotype identification. Rust resistance genes of a variety are known before it is forwarded for official identification. "Gene Deployment" as a strategy was propounded by him and it is being used efficiently as varietal deployment today. The execution of the strategy he did, as Project Director of the All India Wheat program was so perfect that for the last so many years, there had been no serious crop loss due to rust epidemics. Thus, India saves each year nearly 6 to 7 million tons of wheat grain, otherwise that would have been lost due to the outbreak of wheat rust diseases in different wheat growing areas.

As ADG (PP) ICAR and as Acting DDG (CS) he was involved with several AICIPs and variety identification process for number of crops. As a Member of the Central Pesticide Registration Committee, Central Variety Identification Committee, Chairman MEC, Co-Chair RCGM, GEAC facilitated Cotton transgenic evaluation, approval and in various policy decisions. As a Chairman of several special committees constituted by the various Government departments and he submitted several reports on the tasks assigned. He was a member of Board of management of TNAU and Rajasthan AU, NDRI and IVRI. He also served as member of the GB and SFC of the ICAR.

During his period, as Director of the wheat program, he developed new tillage options as zero tillage and the raised bed system of planting and popularized them. Indeed, he has been the torchbearer of India's wheat program. Also, he initiated wheat molecular biology program at national level for marker-aided selection for rust resistance and for grain quality improvement. Along with his colleagues, he identified two new leaf rust resistance genes as *Lr48* and *Lr49*. Under public private partnership, a barley variety DWRUB52 was developed by DWR with funding from United Breweries and a wheat variety DBW 14 suited for eastern Gangetic plains.

As Project Director Wheat, the largest network project, his team produced maximum amount of breeder and nucleus seed, established wheat germplasm bank and produced wheat germplasm catalogue. He introduced wheat cultivation in the tropical hills of Indonesia. He joined as Director of IARI in 2002 and in less than four years he made structural improvement in the research and teaching agenda of IARI by re-writing the PG School Curriculum, vision document, reframing the several new research projects.

He was a member of the Centre Commissioned External Review (CCER) of CIMMYT, Mexico. He was recognized for his significant contributions with the Rafi Ahmed Kidwai Award of the ICAR (1978-79), Conferred “Award of Distinction” at the International Plant Protection Congress, The Hague (1995), The Best Institute Award for DWR by ICAR (1998), M.O.P. Iyengar Lecture Award of the University of Madras (2000), Om Prakash Bashin Award (2001), Chaudhary Ram Dhan Singh Award for contribution to wheat improvement (2002) by HAU, Hisar, Dr. K.S. Bilgrami Award of INSA (2004), Dr. Norman Borlaug Award of the Coromandel Fertilizers (2005), Dr. A. S. Cheema Award of the Young Farmer’s Association of Punjab (2005), received from the Prime Minister of India the “Dr. B P Pal Gold Medal” in the 93rd Indian Science Congress for contribution to Science and Technology – wheat pathology and wheat improvement (2006) and was a recipient of the Silver Jubilee Medal of INSA for contribution to Agriculture and Allied Sciences (2006).

Dr Nagarajn was the Fellow of the National Academy of Agricultural Sciences (1992), Fellow National Academy of Sciences (2002), Fellow of the Indian National Science Academy (2005) and Fellow, Alexander von Humboldt Foundation (1978) Germany. He presided over the convocation of the Punjab Agricultural University (2005), and delivered the convocation address of TNVASU (2006). He had visited more than 25 countries during his scientific career. He is author of more than 200 research papers, 90 book chapters, many edited books and two textbooks.

He transformed DWR, Karnal and from a mere coordination centre, we moved to a research institution- Institute of Wheat and Barley Research. Many of the facilities today at IIWBR are testimony of his hard work and vision. It was because of his vision and foresight that he laid the foundation of a very sound wheat rust programme at Flowerdale, Shimla which he strengthened as Project Director and Genome sequencing of wheat rusts was conceptualized with funding from DBT. His visionary efforts have resulted in avoiding wheat rust epidemics for the last 45 years.

Sudden demise of Dr. Nagarajan on 25th December 2016 has left a vacuum in the scientific world. The members of the Society for advancement of Wheat and Barley Research pray almighty to grant peace to the departed soul and give strength to the family, all near and dear ones to bear this grave loss.

SC Bhardwaj
Vice President, SAWBAR