Celebrating Rattan Lal

Winners of World Food Prize can be role models for India's young

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RATTAN LAL, NATIVE of India and a citizen of the United States, has been awarded the 2020 World Food Prize. He is one of eight persons of Indian origin to have received the prize, established by Norman Borlaug in 1987. Borlaug won the Nobel Peace Prize in 1972 for his work on hybridisation of wheat and rice, which led to the Green Revolution in the mid-1960s. The World Food Prize is often described as the Nobel for research in food. Upon winning the Nobel, Borlaug had tried to convince the Nobel committee to set up a prize for food. When it refused, he set up the award himself.

The awards to eight Indians of the total of 50 given so far are a tribute to the country's agricultural university education and research system. The awardees are perfect role models for India's rural youth. The country should celebrate their achievements unabashedly when 7-10 million new productive jobs need to be created annually, and when it accounts for a third of global undernourishment. The COVID-19 pandemic has made job creation and improved nutrition and health more urgent than ever.

What is common to these scientists is their modest background — almost all are sons of farmers. Each has dedicated his life to the pursuit of agricultural science with integrity and passion, spanning decades of research and making spectacular contributions to environmentally sustainable food production. Their work has benefitted millions of small and marginal farmers throughout the world. They are also role models because they have demonstrated high returns to investment in agricultural education and scientific research.

The awardees all come from the time of the green and rainbow revolution (of dairy and aqua-culture), when India invested heavily in agricultural science education and research and Indian scientists shone brightly in the global galaxy of science. Government support for state agricultural universities, and research conducted by the Indian Council of Agricultural Research (ICAR) and the departments of science and technology and biotechnology has slipped in recent years. Today, not a single Indian university is counted among the top 100 in the world.

Rattan Lal was awarded for developing and mainstreaming a soil-centric approach to increasing food production that restores and conserves natural resources and mitigates climate change. His research has shown that growing crops on healthy soils produces more food from less land area, less use of agrochemicals, less tillage, less water, and less energy.

Born in Pakistan in 1943, Lal's family migrated to India during Partition. He completed his education from the Punjab Agricultural University — another PAU alumnus, Gurdev Khush, won the prize in 1996 for his research on rice breeding. Other recipients of the prize include M S Swaminathan, Verghese Kurien, Ramlal Barwale, Surinder Vasal, Modadugu Gupta and Sanjaya Rajaram.

Swaminathan's vision transformed India from a "begging bowl" to a "breadbasket" almost overnight, bringing the total crop yield of wheat from 12 million tonnes to 23 million tonnes in four crop seasons and ending India's dependence on grain imports. Kurien, received the prize in 1989 for India's white revolution. Under his leadership, milk production increased from 23.3 million tonnes (1968-69) to 100.9 million tonnes (2006-07) and is projected to reach 187 million tonnes for 2019-20, bringing millions of small and marginal farmers, including women into the marketplace.

Barwale, a small farmer and entrepreneur, received the award in 1996. He made selling seeds of okra and sorghum "hip" and founded the Maharashtra Hybrid Seeds Company. The Crop Science Society of America has called him father of the seed industry in India. He introduced hybrid rice from China to India and established an eye clinic for the poor in his native town of Jalna.

Vasal was given the prize in 2000 for developing quality protein maize (QPM). Integrating cereal chemistry and plant breeding techniques, Vasal and Villegas of Mexico collaborated to work on "opaque-2" maize variety using molecular biology techniques. In the mid-1980s, they produced a QPM germplasm with hard kernel characteristics and taste like that of the traditional grain, but with much higher quality levels of lysine and tryptophan, thereby enhancing the nutrition value. Vasal had received his PhD in genetics and plant breeding from the Indian Agricultural Research Institute (IARI).

Gupta received the award in 2005 for starting a blue revolution. Educated in Calcutta, he worked as a research associate at ICAR and developed two exceptional approaches for increasing fish harvests among the very poor thereby increasing the protein and mineral content in the diets of over one million of the world's most impoverished families. Gupta's aquaculture technologies boosted Bangladesh's fish yields from 304 kg per hectare to over 2,500 kg per hectare in less than a year — including 1,000 kg per hectare harvests in the dry season.

Rajaram, who won the prize in 2014, succeeded Borlaug in leading CIMMYT's wheat breeding programme and developed an astounding 480 varieties that have been widely adopted by both small and large-scale farmers. Rajaram was born near a small farming village in Uttar Pradesh and received his master's degree from IARI.

Students and faculty at ICAR and state agricultural universities can follow in their footsteps and achieve scientific excellence, if they receive the resources and their work is supported with incentives.

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