Wolf Prize to Gurdev S. Khush

The Wolf Foundation announced, on 10 January 2000, the award of the prestigious Wolf Prizes for chemistry and agriculture. The chemistry prize has been awarded to F. Albert Cotton, 69, of Texas A&M University, USA and the agriculture prize to Gurdev S. Khush, 64, of India working at the International Rice Research Institute (IRRI) in the Philippines. Each awardee will receive $ 100,000.

Cotton is an inorganic chemist who initiated an entirely new phase of transition chemistry and his work has influenced other fields, including molecular biology, solid-state physics and geology.

Gurdev S. Khush was honoured for his 'extraordinary contribution to theoretical research in plant genetics, evolution and breeding, especially of rice, with regard to food production and alleviation of hunger.' He has been able to produce more eco-friendly rice varieties resistant to several major insect pests, the Foundation said. More than 300 varieties of rice developed under his leadership have been released for planting in nearly 50 million hectares of rice land all over the world.

The Wolf Foundation was established in 1976 by Ricardo Wolf (1887–1981), inventor, diplomat, philanthropist, and his wife Francisco Suborn-Wolf (1900–1981), 'to promote science and art for the benefit of mankind'. Five annual Wolf Prizes have been awarded since 1978.

Gurdev S. Khush, born in 1935, graduated in Agriculture (1955) from Punjab University, Chandigarh. He obtained his Ph D in Genetics from University of California at Davis (1960); he worked there as Assistant Geneticist until 1967. He has been with the International Rice Research Institute (IRRI) at Los Banos, Philippines since then. He is currently the Principal Plant Breeder and the Head of the Plant Breeding Department at the IRRI.

Khush has published his findings extensively in a large number of research papers, books and conference proceedings. He has been elected to a large number of Academies including Indian Academy of Sciences, Indian National Science Academy, New York Academy of Sciences, US National Academy of Sciences, Third World Academy of Sciences and the Royal Society. Khush has received several awards for his monumental contributions to rice breeding and genetics; these include amongst others, the Borlaug award (1977), the Japan Prize of Science and Technology of Japan (1987) along with Beachell for the development of the rice varieties IR8 and IR36 and the International Agronomy Award (1989) of the American Society of Agronomy. Khush shared the 1996 World Food Prize with Henry M. Beachell (USA) former Head of the Plant Breeding Department at IRRI. The prize was established in 1987 by the John Ruan Foundation, Iowa to supplement the Nobel Peace Prize, and honours those in agriculture who have substantially increased the world food supply.

Khush has lead the team responsible for developing robust, high yielding strains of rice with enhanced resistance to major pests and, specifically, 'a variety that has a high yield potential and is ideal for sustainable agriculture as it does not need insecticides. It has built-in resistance to major pests and diseases'. While an improved rice variety IR 72 produces on an average 100–110 grains per panicle, this 'super-rice' will yield 200–220 grains per panicle, according to him. There will be great saving in the plant protection operation. The new rice will also produce nutritionally rich and good quality straw.

Writing recently on 'Green revolution: preparing for the 21st century'*, Khush noted that 'In the 1960s there were large-scale concerns about the world's ability to feed itself. However, widespread adoption of "green revolution" technology led to major increases in food-grain production. Between 1966 and 1990, the population of the densely populated low-income countries grew by 80%, but food production more than doubled. The technological advance that led to the dramatic achievements in world food production over the last 30 years was the development of high-yielding varieties of wheat and rice. These varieties are responsive to fertilizer inputs, are lodging resistant, and their yield potential is 2–3 times that of varieties available prior to the green revolution. In addition, these varieties have multiple resistance to diseases and insects and thus have yield stability. The development of irrigation facilities, the availability of inorganic fertilizers, and benign government policies have all facilitated the adoption of green-revolution technology. In the 1990s, the rate of growth in food-grain production has been lower than the rate of growth in population. If this trend is not reversed, serious food shortages will occur in the next century. To meet the challenge of feeding 8 billion people by 2020, we have to prepare now and develop the technology for raising farm productivity. We have to develop cereal cultivars with higher yield potential and greater yield stability. We must also develop strategies for integrated nutrient management, integrated pest management, and efficient utilization of water and soil resources.'

*From National Research Council of Canada's, Canada Institute for Scientific and Technical Information website: http://nrc.ca/cisti/journals/gen/g99-044.html