

For further information, contact:
David Poland 522 878, 524 600, 524 608
d.poland@cgiar.org

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CGIAR “OUTSTANDING SCIENTIST” AWARD TO RESEARCHER WHO BUILDS “BRIDGES” TO PROTECT WHEAT

Nairobi, Kenya, 29 October 2003—Dr. Abdul Mujeeb Kazi, a cytogeneticist and head of Wheat Wide Crosses at the International Maize and Wheat Improvement Center (CIMMYT), was recognized as Outstanding Scientist of 2003 by the Consultative Group on International Agricultural Research (CGIAR) at its annual meeting, taking place in Nairobi this week.

Francisco Reifschneider, Director of the CGIAR, said that “Dr. Kazi’s work exemplifies what is best about international public research, for which the CGIAR is justifiably recognized. He had the vision to understand how very specialized research tools could be used on a large scale to meet the challenge of food security in developing countries. We are pleased to honor his achievements today.”

Dr. Kazi has spent most of his career helping plant breeders compensate for the fact that nature created an enormously successful crop—wheat—out of very limited genetic material.

Wheat is grown on more land than any other food crop and is vital to the livelihoods of hundreds of millions of people.

The most widely grown form of wheat is bread wheat, a fairly recent crop in evolutionary terms (the “wheat” mentioned in the New Testament is not bread wheat but one of its ancestors). Because bread wheat arose from a very few crosses between primitive wheats and wild grasses, it has what plant breeders call a “shallow gene pool.” Compared to other species, it has fewer of the rare but desirable genes that help defeat stresses such as drought and disease.

Dr. Kazi turned to wheat’s wild relatives to deepen the gene pool. He developed and refined techniques for crossing wild relatives to wheat. By repeating the process that nature initiated, Dr. Kazi made it possible for wheat to capture some of the useful genes it had missed earlier in its evolution.

Although other researchers have employed similar techniques, none has used them successfully on such a wide scale, and none has produced as many useful hybrids for other researchers to use in breeding better wheat.

“More than 1,000 wheats developed by Dr. Kazi are freely available to plant breeding programs around the world through CIMMYT’s extensive research network,” said Dr. Masa Iwanaga, Director General of CIMMYT. “Varieties based on his research are already available to farmers in Asia and Latin America.”

Dr. Kazi’s new wheats are called “synthetic” or sometimes “bridge” wheats because they can bridge the gap between wild species and highly improved modern varieties. Complex to produce, they are nevertheless easy to cross with high-yielding wheats to eliminate negative characteristics inherited from the wild parent. The resulting wheats are like their improved parents, except for the desired trait from the wild parent.

This process enables CIMMYT and breeding programs around the world to speed the development of varieties with many desirable characteristics, especially the ability to cope with stresses (disease, drought, saline soils). Many of these stresses are expected to become worse with climate change, so Dr. Kazi's research has provided a valuable form of insurance for farmers. For example, by crossing durum wheat (a type of wheat used to make pasta rather than bread) with a wild grass called goatgrass, Dr. Kazi helped CIMMYT's wheat breeders develop plants with outstanding drought tolerance.

A disease call Helminthosporium has a global impact on wheat production. It is a serious problem in at least 15 countries, including Zambia and Bangladesh. The disease comes in many forms, and few varieties can withstand every one. Through his work with bridge wheats, Dr. Kazi identified some of the very few sources of genetic resistance to this disease and enabled them to be bred more widely into new wheat varieties. Even more important, some of the new varieties contain resistance to many other diseases as well, such as scab, blights, root rots, and rusts.

"Dr. Kazi has provided resources that will be valuable for decades to come in breeding programs around the world, including the program in Bangladesh," said Dr. A.S. Islam, a long-time proponent of Dr. Kazi's work, first at Dhaka University in Bangladesh and now at the University of Texas.

"I believe Dr. Kazi has developed more genetically diverse wheat strains than any prior or current wheat breeder in the world," said Dr. Calvin Qualset, Professor and Director Emeritus of the Genetic Resources Conservation Program at the University of California-Davis and former coordinator of the International Triticeae Mapping Initiative. According to Qualset, Dr. Kazi's work also set the stage for expanding our knowledge of wheat genetics. One of Dr. Kazi's bridge wheats, crossed to an improved CIMMYT wheat called "Opata," became the world standard for genetic mapping of wheat. "Early mapping was hampered by the lack of genetic diversity in traditional wheat varieties," explained Qualset. "The extensive variation in the plants resulting from Dr. Kazi's cross with Opata made it possible to develop a comprehensive genetic map." One of the map's uses is for comparative genetic studies of wheat and other species, which will identify even more useful diversity.

Dr. Kazi is well known for these successful applications of basic science, for thoroughly documenting and publishing his work, mentoring young researchers, and making his novel wheats available to all who wish to study or use them. One hundred and sixty of his wheats have been registered in the journal *Crop Science*, and they are available to researchers everywhere.

Now a US citizen, Dr. Kazi was born in Pakistan, where he obtained a BSc in biology and an MSc in botany from the University of Karachi. In 1967 he went to the USA, where he received his PhD in plant breeding from Kansas State University in 1970. He has worked in Pakistan as Senior Scientific Officer in the Genetics Division of the Atomic Energy Commission. In late 1979, Dr. Kazi came to work at CIMMYT and has headed the Wheat Wide Crosses Unit since 1980.

This recognition from the CGIAR caps a career marked by many honors and awards. A member of several honorary academic societies, Dr. Kazi is also a Fellow of the American Society of Agronomy, the Crop Science Society of America, the Mexican Academy of Sciences, and the Third World Academy of Sciences, among others. He was recently named Distinguished Scientist at CIMMYT. A paper on wheat genetic diversity, coauthored with CIMMYT staff, has been recognized as one of the year's best journal articles by the American Society of Agronomy.

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CIMMYT (www.cimmyt.org) is a research and training center working to improve the productivity, profitability, and sustainability of maize and wheat production in developing countries. It is one of several research centers support by the CGIAR (www.cgiar.org).

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