NEWS

JAPAN'S TOP SCIENCE PRIZE

The Prize — patterned "in the tradition of the Nobel Prize" — is Japan's most prestigious.

Two IRRI scientists received the 1987 Japan Prize for their roles in the development of improved semidwarf varieties that launched the "Green Revolution" in rice farming. Sharing the Prize were Dr Henry M. Beachell, former IRRI Plant Breeder, and Dr Gurdev S. Khush, currently head of IRRI's Plant Breeding Department.

About 500 semidwarf rices are grown on 70 million hectares — about 55% of the Third World's rice land. Their yield increase alone feeds at least a third of a billion people. About 150 of the varieties were bred at IRRI, and IRRI materials served as "genetic building blocks" for most of the others.

Beachell, who joined IRRI in 1963, was honoured for his work on IR8, the first semidwarf rice variety to be widely grown in the tropics. Khush joined IRRI in 1967 and led the effort that developed IR36, which became the most widely grown variety — of any crop — the world has ever known. By 1983, IR36 was planted on 11 million hectares in Asia, Africa, and Latin America.

IR8 had a short, stiff straw that enabled it to yield heavily without falling over. Its insensitivity to daylength meant that farmers could grow it around the world. With good management, IR8 yielded 4 to 5 tons per hectare on irrigated farms; traditional varieties yielded 1 or 2 tons. The increased farm productivity that followed in the wake of IR8 gave rise to the term "Green Revolution".

"But IR8 had several problems", Beachell points out. "It was susceptible to diseases and insects, and in some countries its grain appearance and eating quality were considered inferior to those of traditional varieties".

IR36 was developed, under Khush's leadership, from crosses involving 13 parents from 6 countries. It was evaluated cooperatively by scientists at IRRI and in national agricultural programmes across Asia. IR36 was first named as a farm variety in 1976 in the Philippines, and then released by national agencies throughout the developing world.

The popularity of IR36 was largely due to its genetic resistance to a dozen insects and diseases, which decreased farmers' dependence on pesticides. IR36 also has resistance to environmental stresses such as drought and nitrogen-deficient soils. IR36 matures in about 105 days in contrast to 130 days for IR8 and 150–170 days for traditional varieties. Its slender grains are generally considered surperior to those of most earlier semidwarfs. IR36 has been especially popular in the Philippines, Vietnam, Indonesia, India, Malaysia, Kampuchea, Laos, Bangladesh, and Sri Lanka.

"The greatest difficulty in the development of IR36 was incorporating resistance to grassy stunt, a virus disease to which all domesticated rice varieties were susceptible", Khush recalls. Scientists in India collected seeds of a wild rice, *Oryza nivara*, which they sent to IRRI. There it was found resistant to grassy stunt; its resistance genes were crossbred into IR36.

Beachell and Khush were the first awardees in agricultural science to receive the Japan Prize. The Science and Technology Foundation of Japan initiated the Prize in 1985 to recognize persons who have "served the cause of peace and prosperity for mankind through original and outstanding achievements in science and technology".

The other 1987 Japan Prize went to Dr Theodore H. Maiman, President of Maiman Associates in California. In 1960 Maiman developed the world's first laser, triggering a new technology that revolutionized such fields as physics, medical science, and telecommunications.

Each Japan Prize carries a cash award of Y50 million (about US $ 350,000).

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