

International rice research

Fighting hunger and poverty for 50 years

This year, the International Rice Research Institute (IRRI) in the Philippines is celebrating its 50th anniversary. A success story that also relies on the support of numerous partners. Bayer CropScience is one of these: the cooperation has recently been extended through new projects.

If we are to win our war against poverty, and against disease, and against ignorance, and against illiteracy, and against hungry stomachs, then we have got to succeed in projects like this, and you are pointing the way for all of Asia to follow." This is the message Lyndon B. Johnson addressed to staff at the International Rice Research Institute (IRRI) during a visit he made to the Philippines in 1966. With "projects like this", the then US President was referring directly to the work of the IRRI researchers.

At that time, the Institute was just a few years old, and it was only possible to guess what future contribution it would make to the "war" Johnson was referring to. The facility was founded in 1960 – jointly by the Ford and Rockefeller Foundations and the Philippine Government. The choice of location fell to Los Baños, which lies south of Manila, because it was recognised as a promising central location in terms of agricultural science. IRRI finally began its work in 1962.

The plants shown to Lyndon B. Johnson during his visit derived from the then new rice cultivar IR8. This special cross was to become one of IRRI's first success stories. The cultivar helped Asian rice farmers to increase their yields markedly. No wonder, then, that IR8 also entered history as "Miracle Rice".

In 1960, the year the decision was made to establish a rice research centre, the



Cooperation for higher rice production. From left to right: Dr. Joachim Schneider, Head of Bayer CropScience's BioScience Business Unit; Dr. Achim Dobermann, Deputy Director General of IRRI; Professor Friedrich Berschauer, Chairman of the Board of Management of Bayer CropScience; and Frédéric Arboucalot, Head of Rice Seeds and Traits at Bayer CropScience.

global average yield harvested by rice farmers was 1.8 tonnes per hectare. Around 50 years later, in 2008, the corresponding figure was 4.3 tonnes a hectare: a more than doubling of productivity. Part of this yield improvement is clearly attributable to the work of IRRI. Take the local Philippine farmers, who achieved a leap in yield from 1.2 tonnes per hectare (1960) to 3.8 tonnes per hectare (2009), having benefited, in the intervening period, from more than

75 new rice varieties coming out of IRRI research. In 2009 alone, eight new varieties were added to this total. All in all, IRRI produced more than 450 rice lines between 1966 and 2009, developing 864 new varieties from them. These have been cultivated (and in some cases are still being cultivated) in a total of 78 countries.



The cooperation between Bayer CropScience and the International Rice Research Institute (IRRI) is targeted at increasing the productivity of rice cultivation.

In November 2009, Dr. Robert Zeigler, the Director General of IRRI, commented: "These successes would never have been possible without our partners and sponsors from around the world." Among the more than 50 partners and sponsors are organisations, ministries, foundations and industrial companies, Bayer CropScience has been a cooperation partner to IRRI for many years.

New projects have been launched recently. In 2008, Bayer CropScience joined a consortium that aims to develop hybrid rice. This consortium, which is being led by IRRI, intends to promote the exchange of hybrid rice technologies. Given their clearly higher yields, hybrid rice varieties represent one of the key elements in maintaining the ability to increase rice production in the future. Bayer CropScience is the leading global company for hybrid rice varieties, and is selling a two-figure number of varieties. At the end of 2009, Bayer CropScience and IRRI set up a joint program to further intensify knowledge exchange. The collaboration has three major elements. "In a first project, we're supporting the creation of a broad gene-database", explains Dr. John Jacobs, a BioScience Researcher based at Bayer CropScience's unit in Gent, Belgium. This will involve

gene-mapping of more than 2,000 rice varieties in order to reveal relationships between specific gene sequences and plant characteristics such as yield potential. "Data on these relationships will provide important impulses for developing even more productive rice varieties in the future", continues Jacobs.

Cooperation with IRRI extended

In a second project, IRRI and Bayer CropScience want to work jointly to develop a method for diagnosing the damaging bacterial blight disease; the aim is to provide a tool suitable for use in practice that is capable of rapid and reliable detection of the pathogen when it is already present in the seed. Current detection methods are not sufficiently reliable, often delivering false results. The third sub-project concerns the effects of rice cultivation on the climate. Because the conditions in many flooded rice fields lead to the release of the climate-damaging gas methane, research is needed into whether a switch to the direct-seeding method would lead to a reduction in methane emissions. Of course, this cultivation method also

requires less water than traditional growing techniques.

The cooperation work is well appreciated at IRRI. "We are pleased to be able to combine our strengths with those of Bayer CropScience, in order to enhance the scope and value of rice research", comments Dr. Achim Dobermann, Deputy General Director for Research at IRRI. Professor Friedrich Berschauer, Chairman of the Board of Management of Bayer CropScience, also emphasizes the company's interest in supporting rice research. "Rice is the world's most important food crop. Through our research into higher-yielding, disease-resistant varieties, we want to make our contribution to food security in the 21st century."

An ambitious undertaking. The human population is growing rapidly, particularly in Asia, where rice is the number-one staple food. Even 44 years later, Lyndon B. Johnson's speech to the IRRI staff – especially his reference to the "War against poverty and empty stomachs" – remains as relevant as ever. It's a good thing then that we have IRRI – and its supporting partners. ◀