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December 11, 1982

Dear Professor Sverdrup,

I have great pleasure in enclosing details of the work done by the International Rice Research Institute (IRRI) located at Los Baños in the Philippines for being considered for the award of the Nobel Peace Prize for 1983.

The International Rice Research Institute was established in 1960 at a time when many experts had concluded that the densely populated regions of South Asia will face some of the worst famines in human history during the 1970s. Most of the countries in South and Southeast Asia have rice as the major staple. Also, rice farming systems provide most of the jobs to landless labor families in rural areas. Thus, the status of nutrition as well as quality of life of rural families are closely linked to the fate of the rice crop. In the developing nations of Asia, rice yields had remained stagnant between 1 to 1.5 tons/hectare for over a century. The average annual growth rate in rice production was as low as 0.1% before 1950. It is in this background of an impending human tragedy of unprecedented dimensions that the International Rice Research Institute was established. The scientists of this Institute have worked with single-minded devotion during the last 20 years and have succeeded in converting despair into hope. The enclosed documents including the assessment made by an independent panel of eminent experts on the work of the Institute would show the widespread impact of the new technologies developed by IRRI. In most countries of South and Southeast Asia, the rate of growth in food production has remained above the rate of growth in population during the last decade. Also, several crops of rice are grown in a year where only one uncertain crop grew before. The principal contributions of IRRI could be summarized as follows:

1) Development and popularization of new technologies which have helped to elevate and stabilize the productivity of rice and rice-based cropping systems

2) Development of technologies which can help to improve the production under drought-prone and flood-prone conditions as well as in soil environments affected by problems such as salinity and alkalinity

3) Improvement of the income and employment potential of rice farming systems

4) Human resource development leading to the training of about 3000 rice scientists who are enhancing national R & D capability

5) Analysis of the constraints responsible for the gap between potential and actual yields in the fields of small farmers

6) Study of the consequences of new technologies from the ecological, energy consumption and employment and income generation aspects

Above all, IRRI's great contribution has been in developing a well-knit family of rice research workers in the entire rice growing world, all bound together by a determination to serve rice farming families. The Third World Foundation for Social and Economic Studies has brought out the value of such teamwork in the following words in the Citation relating to the Award of the Third World Prize, 1982 to IRRI:

> "Over the last two decades when so much else faltered in the struggle against hunger and poverty, IRRI's quiet, persistent, highly professional and wholly dedicated work touched the lives of millions in the Third World, improving the human condition in truly practical and lasting ways. That such a contribution should have been the result of fruitful cooperation between scientists and food technology experts from developed and developing countries alike is in itself a cause of satisfaction and encouragement."

The following extract from a statement made by Dr. M.S.Swaminathan, Director General, IRRI while accepting the 1982 King Baudouin Award for Agricultural Research on behalf of IRRI would bring out clearly the power of cooperative endeavour among farm scientists located in developing countries. The example taken is the disease and pest resistant rice variety IR 36 which is cultivated in over 10-million hectares all over Asia.

> "IR 36 represents the unusual power and opportunity which the birth of IRRI has conferred upon rice scientists. It has in its parentage 13 varieties, including a wild species, Oryza nivara, drawn from six countries. Even more significant is the fact that the actual selection for pest resistance was done in 'hot spot' locations in several countries.

Thus, a part of the selection work was done at different locations in the Philippines; seeds of F^5 lines were sent to Indonesia where this disease occurred in a severe form in the South Sulawesi region. Seeds of promising F^6 lines were sent to the Central Rice Research Institute in Cuttack, India, for screening for resistance to gall midge. In this manner, lines which were resistant to blast, bacterial blight, grassy stunt, tungro, green leafhopper, brown planthopper, stem borer and gall midge were selected. The actual naming and release of IR 36 were done by the national research systems and the variety testing and release authorities of the Philippines, Indonesia, Vietnam, India, Kampuchea, Laos and Malaysia. Testing of IR 36 is in progress in Burma, Bangladesh, Sri Lanka, China, Malagasy, Mozambique and Zambia."

"Thus, there would have been no IR 36 had there not been a collaborative network of rice scientists working in different countries as members of a well-knit family. The organization of such cooperative networks of research workers, all working towards the same goal represents one of the most exciting and fruitful adventures in applied agricultural research in human history. The 'heterosis effects' generated by the spread of "genes for cooperation" among rice scientists as well as the opportunities opened up for the planned piling up of desirable genes and for the rigorous rejection of susceptible material through screening for reaction to pests and diseases at natural 'hot spot' locations and under artificial conditions, have enlarged the frontiers of accomplishments possible through agricultural research."

It is my conviction that but for the progress made in improving the well being of rice farming families in rural Asia, many countries in this region where over 60% of the world's population live would have been beset with socio-political chaos. Peace in this region is largely due to agricultural progress. IRRI's work is a significant contribution in fighting the famines of food and jobs. It would therefore be appropriate to remind, once again, world leaders that agricultural progress holds the key to agrarian and rural prosperity and socio-political stability. In addition, the award of the Nobel Peace Prize to the International Rice Research Institute will be a symbol of the value of cooperation among nations in harnessing science for human happiness without consideration of race, color, religion, and political ideology. The world needs such a message urgently.

I shall be happy to provide any other information you may need.

With my regards.

Sincerely yours,

Norman E. Borlaug

Norman E. Borlaug
Nobel Laureate

Professor Jakob Sverdrup
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The Nobel Institute
Oslo, Norway

Enclosures

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August 23, 1983

Dear Minister Norman,

I have pleasure in sending a brief report on some of the recent research work of the International Rice Research Institute.

1. Monsoon Management:

During 1982 global food production rose faster than population. However, the food output scenario shows a mosaic pattern partly arising from the impact of adverse weather conditions. Many rice growing countries have suffered from drought as well as delayed onset of monsoon. The International Rice Research Institute, therefore, attaches great importance to crop management under different monsoon conditions. An important component of the monsoon management strategy is the development of early maturing varieties which can be both harvested early and sown later. The Philippine Seed Board released in May this year two new varieties, IR58 and IR60. IR58 has in its parentage the very early maturing Chinese variety, Kwang Chang and has resistance to brown planthopper biotype 3. IRRI's Research Highlights for 1982, a copy of which has been sent to you separately, places considerable emphasis on staying one step ahead of adversaries like pests and unfavorable weather. We shall be happy to work with your scientists in developing appropriate strategies and contingency plans for achieving stability of production. Additional screening and testing of early maturing varieties and cold tolerant varieties can be arranged at appropriate locations. I would request you to get particular attention paid to achieving varietal diversity by extending national testing programmes in such a manner that they can help in the identification of location-specific varieties in addition to strains with wide and general adaptation.

2. Increasing Income and Employment:

Another area where IRRI has placed considerable emphasis is increasing income from rice farming. For this purpose, we have initiated a pioneer project with financial support from the Asian Development Bank and with technical collaboration with the University of the Philippines at Los Banos. This project has two major components: one, dealing with increasing productivity and decreasing the cost of production; and the other, preparation of value-added products from every part of the rice plant. For this purpose, the different opportunities now available for a better use of rice straw, bran, and hull or husk will be demonstrated.

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I shall be grateful if you could help us in exhibiting in this demonstration cum training farm the recent technical innovations in biomass utilization in your country. For example, if techniques have been developed for using rice straw and cellulosic wastes for generation of biogas or for production of paper or mushrooms, can you kindly arrange for that technology to be demonstrated in our farm? Similarly, if there are biogas and solar energy operated irrigation pumps, can you kindly arrange to get a unit installed in our demonstration farm? I am including solar photovoltaic systems because ultimately we expect the commercial production of solar grade silicon from rice hulls. You can help to demonstrate the extraction of edible grade oil from rice bran and the fortification of straw and defatted bran for use as animal food. We plan to adopt a cafeteria approach in this demonstration farm so that farmers and rural development and banking agencies from different parts of the world could select those technologies which are economically viable and socially relevant in their respective areas. The source of the technologies exhibited by your country in the demonstration farm will be properly acknowledged. We shall also be happy to meet the transportation costs, where necessary.

3. Increasing the Efficiency of Fertilizer Use:

An area of research and extension which merits particular attention relates to the efficiency of fertilizer use. It is well known that under monsoon conditions, fertilizer losses particularly of nitrogen can be very high in areas with poor water management. A joint programme of research undertaken by IRRI and the International Fertilizer Development Center has helped to identify the major causes of fertilizer losses. We are thus in a position now to recommend more precise remedies based on a clear understanding of the precise maladies operating in an area. The International Network on Soil Fertility and Fertilizer Evaluation for Rice (INSFFER) programme is being strengthened in order to promote integrated nutrient management involving an appropriate blend of organic, mineral, and biofertilizers.

4. Extending the Frontiers of Adaptation of High-Yield Technologies to Ecologically Handicapped Regions:

In the third decade of IRRI, emphasis has been placed on extending the benefits of new technologies to ecologically handicapped areas and economically handicapped farmers. For this purpose, a detailed study of major rice growing environments has been undertaken and 17 different growing conditions of importance from the point of view of the area covered have been recognized in irrigated, rainfed lowland, deep water, upland, and tidal wetland areas. Already with existing resources, steps

have been taken to intensify research on rainfed upland rice. A training programme has been organized with the help of the International Institute of Tropical Agriculture (IITA), West Africa Rice Development Association (WARDA), and the Centro Internacional de Agricultura Tropical (CIAT) for 28 candidates from 15 countries. An International Upland Rice Newsletter has been started and a Coordinated Upland Rice Action Program has been initiated jointly with CIAT, IITA, WARDA, and the Institut de Recherches Agronomiques Tropicales (IRAT).

For the purpose of enlarging the genetic variability available to breeders working on yield improvement in deep water rice, an extensive hybridization programme has been initiated at Los Banos. Segregating material will be sent to appropriate national research systems for selection under local conditions. Similarly, research on tolerance to adverse soil factors has been intensified. At the same time, research designed to sustain and expand production gains in irrigated areas is being stepped up with emphasis on breeding varieties possessing multiple resistance to pests and diseases and on minimizing losses of applied fertilizer due to different factors. Approximately, the distribution of IRRI's research and training programmes according to type of rice culture during 1984 will be 43% for irrigated rice, 31% for rainfed (bunded) rice, 18% for dryland (unbunded) rice, and 8% for deep water rice. With the help of Dr. and Mrs. R. E. Huke of the Dartmouth College, USA, we have prepared detailed agro-climatic and dry season maps of south, southeast, and east Asia. We have also prepared maps on rice area by type of culture. These will be of help to those engaged in rice research and development and I am sending you separately copies of these maps.

5. Small Farm Management:

It is now becoming clear that the efficiency of farm management under conditions of small holdings and individual ownership of land can be enhanced greatly by stimulating group and community work in a watershed or village. Technologies for small holdings can be broadly classified into two groups -- those that can be profitably adopted by individual farmers and those which require community cooperation for profitable adoption. IRRI hence proposes to organize a training programme to stimulate group action in areas such as integrated water, pest, and fertilizer management, and improved post harvest technology.

6. Conservation of Rice Genetic Resources.

Last year, I had written to you about the steps being taken to preserve for posterity the fruits of thousands of years of natural and human selection in rice. I am happy to report that we have had excellent

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cooperation from all national programmes in the collection and conservation of rice germ plasm. With the cooperation of the International Board for Plant Genetic Resources, we organized a workshop in May 1983 when a five-year plan (1983-87) was developed for collecting the remaining rice germ plasm possessing genetic characters not yet represented in our world collection. Priority areas for collection in each country endowed with rice germ plasm material were identified. I have written to the heads of national research systems in this matter. If implemented properly, the five-year plan for rice germ plasm collection and conservation should help to obtain a fairly complete sampling of existing genetic variability in rice for current and future use.

7. Museum on the Scientific Impact and Social History of Rice:

In 1985, IRRI will be completing 25 years of service to the rice farmers of the world. Over 60,000 visitors come to IRRI annually, many of whom are students and young scholars. In order to introduce visitors and all others interested to the rich scientific history and social impact of rice, we are planning to organize a museum on the lines indicated in the enclosed note. I shall be grateful if you would be kind enough to ask the concerned agency/institution of your Ministry to help us by furnishing information/material of value in setting up this museum.

I am grateful to you and to the officers and scientists of your Ministry for the support and encouragement we are receiving in our work. Cooperation among national research systems helps to accelerate progress and solve many complex scientific problems. Rice is unique among cereals in that it can grow under a broad spectrum of ecological and soil conditions. Fortunately, we have genetic material in the world which with the help of science can be converted into varieties suited for diverse growing conditions. In this context, it is a happy trend that the contributions of science and technology to national development and to the conquest of hunger are being increasingly recognized. I enclose a brochure on the award of the 1982 Third World Prize to IRRI for your information.

With my best regards.

Yours sincerely,

M. S. Swaminathan
Director General IRRI
Independent Chairman, FAO Council