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The Challenges of Food Security, 11 May 2007

Ever-green Farm Revolution : Challenges Ahead

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The term "green revolution" was coined by Dr William Gaud in 1968 to describe rapid agricultural progress triggered by opportunities for productivity improvement. Such opportunities were opened up in wheat and rice though new plant architecture and physiological rhythm, and in corn, sorghum and several other crops through the commercial exploitation of hybrid vigour. Early in 1968, in an address to the Indian Science Congress, I cautioned that unless the ecological foundations essential for sustained advances in productivity are safeguarded and strengthened, the benefits of green revolution will be short lived. Later, I coined the term "ever-green revolution" to indicate that what the farming world needs is advances in productivity in perpetuity without associated ecological harm.

Global agriculture today is at the crossroads in terms of ecology, economics, equity, energy and employment. Ecologically, the problems have both short term and long term dimensions. Ground water depletion and pollution, soil degradation and biodiversity loss as a result of habitat destruction, are some of the areas of immediate concern. In the long term, climate change leading to adverse changes in precipitation, temperature and sea level, can have disastrous consequences to food security, unless avoidance and adaptation measures are put in place immediately through integrated national and global action.

In the area of economics, agriculture is becoming uneconomic unless massive state support is extended to farmers. Industrialised countries are able to extend such support, while developing nations are unable to do so. This leads to a condition where there is no level playing field in global agricultural trade. In the area of gender and social equity, an important issue relates to the integration of the principle of social inclusion in access to new technologies like biotechnology and information and communication technology. Otherwise gender, genetic, digital and technological divides will further enhance the rich-poor divide and make it difficult for many developing nations to achieve the UN Millennium Development Goal relating to reduction in hunger and poverty by 2015.

In the area of energy, the major issue relates to the diversion of land for fuel production. Every nation will have to decide, based on needs and opportunities, how to apportion land for meeting food and fuel needs in a manner that the needs of both food and energy security can be met.

Finally, in population rich, but land hungry countries, agricultural development has to be based on the principle of job-led growth. In most developing countries, the current food security challenge is economic access to food. The enhancement of purchasing power among those living in poverty is vital for eliminating chronic protein-energy malnutrition as well as hidden hunger caused by the deficiency of micronutrients like iron, iodine, zinc and Vitamin A in the diet.

Among the other emerging threats to food security, transboundary pests like the H5N1 strain of Asian influenza and UG 99 strain of stem rust in wheat are assuming importance. Biosecurity is fundamental to food security.

National policies and strategies for sustainable food security should thus pay concurrent attention to enhancing food production in perpetuity through an ever-green revolution approach, improving purchasing power among the assetless poor through new on-farm and non-farm livelihood opportunities, and safeguarding crops, farm animals and human beings from the onslaught of invasive alien species.

In all these efforts, the uncommon opportunities opened by frontier science and technology like biotechnology, space technology and information and communication technology should be harnessed through a science for sustainable food security movement. In the areas of food and health security, scientists should ensure that the products of their discoveries are available to those who need them most. Biotechnology will then lead us into an era of biohappiness.