

ACCEPTANCE OF THE 1980 JEFFERSON AWARD
IN THE CATEGORY OF GREATEST PUBLIC SERVICE
PERFORMED BY A PRIVATE CITIZEN

By Dr. Norman E. Borlaug

I feel honored and privileged to have been selected by the American Institute for Public Service to receive the 1980 Jefferson Award in the category Greatest Public Service Performed by a Private Citizen.

I am pleased that this year a Jefferson Award in this category has come to someone working in the field of international agricultural science and world food production. It will help focus public attention on the importance of an adequate food supply for the well-being of mankind, a fact that is often ignored by political leaders in many countries of the world. All too often political, educational and scientific leaders in developing nations give little attention and support to agriculture in their development programs despite the fact that usually 60 to 90 percent of the total population live on the land in a subsistence type of agriculture eking out a miserable existence. It therefore seems particularly significant that the American people, who are blessed with the most productive agriculture and the most bountiful food supply of any nation in the world, through the Jefferson Award's Board of Nominators and Board of Selectors have seen fit to grant one of the prestigious Jefferson Awards to someone working in the field of international agricultural sciences. By doing this they have helped to focus public attention on the importance of agriculture and food production to human survival and to social and political tranquility worldwide.

I must emphasize that much of today's American food abundance is the result of President Thomas Jefferson's interest in agriculture and especially due to his vision in purchasing and exploring lands that lay beyond our borders during his presidency. His vision and leadership set the stage for America to become the largest producer of food in the world. Our nation is the best fed nation in the world today--which most of us take for granted--but it is also the largest exporter of food into world markets. In recent years the United States has exported from \$20 to \$32 billion dollars of food and fiber products annually to both food deficit developing nations and to affluent industrialized nations. These sales have contributed greatly to the United States' balance of payments and, in part at least, help to offset the enormous drain resulting from imports of petroleum. Moreover, apart from the sales of agricultural products through commercial channels, over the past three decades our country has also provided vast quantities of food to needy nations under the Food for Peace Program and other emergency measures. Meanwhile, as a nation we have been attempting to assist developing nations in improving their agriculture.

I have spent most of my professional career--36 years abroad--attempting to assist the food deficit third world nations in this task of improving their agriculture and food production. It is a complex and difficult problem. I have seen much progress in improving agriculture and increasing production in many developing countries, but I have also experienced many disappointments and frustrations.

I was privileged to have been one of the original members of the first foreign agricultural technical assistance program, namely, the Mexican Government-Rockefeller Foundation Cooperative Agricultural Research, Training and Production Program. That program was launched in 1943, six years prior to President Harry Truman's 1949 State of the Union message. In that message the so-called Point 4 program was proposed. A year later it became law and formally committed our government to assist developing nations with their programs.

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When one is involved in food production, it naturally follows that one must be concerned about the land base upon which we depend for food production and by the number of people that land base must feed, since approximately 98% of the world tonnage of food is currently produced on the land. It is likely that this will continue to be the case for the foreseeable future, despite unwarranted optimism by some who seem to believe that food in abundance will be harvested from the oceans and inland waters when we can no longer meet the demands for food production on the land.

Anyone engaged in attempting to increase world food production, especially in the densely populated developing nations, soon comes to realize that human misery resulting from world food shortage, poverty and world population are all part of the same complex problem. Growing populations demand more land, not only for food production, but for many other purposes as well. The soaring world food requirements have led to excessive pressures on land use, and continued use of many of the prehistorical and early historical techniques developed to produce food in different ecosystems, including slash and burn, fallow rotations, terracing and irrigation (without drainage). Moreover, uncontrolled animal pressures on grazing lands are beginning to break down as human population pressures force greater intensification of production on existing crop lands.

For the next several decades we have no alternative, if civilization is to avoid disaster, except to improve agricultural technology and apply it wisely worldwide to meet the growing demands for food, the first necessity for a humane life. Unless food

production and distribution and population growth rates are brought into better balance within the next several decades, the world will become increasingly more chaotic. Social, economic and political pressures and strife are building at different rates in different countries of the world, depending upon the human population density and growth rates and upon the natural resource base and industrial base that sustains the different economies. The poverty in many of the developing nations will become unbearable. There is also every likelihood that the standard of living in many of the affluent nations may stagnate or even in some cases retrogress as they compete for non-renewable resources in an increasingly more interdependent world. As human population pressure mounts, it will adversely affect the quality of human life in many parts of the world and will also affect the survival of many other species.

These are some of the problems that must be confronted and mitigated, if not completely solved, in the next several decades if we are to survive rather than collapse.

As I look at the magnitude of the problem of world food needs for the next half century I am frightened. In 1975, when world population reached 4 billion, the world produced an all-time record harvest of approximately 3.3 billion metric tons of all kinds of food--e.g., grains, grain legumes, tubers, vegetables, fruits, nuts, sugar, oil seeds, eggs, meat, milk and fish. It took from the beginning of agriculture and animal husbandry, some 12,000 to 14,000 years ago, up until 1975, to gradually increase production to the aforementioned record production of 3.3 billion tons. If human population growth continues at the same level as prevailed in 1975, it would double in about 40 years to 8 billion by the year 2015 AD. Even if we assume that it will slow considerably in the next two or three decades, it may take 60 or even 80 years to double, thereby pushing back the 8 billion total until the years 2035 or 2055 AD, respectively, which I believe to be unrealistically optimistic. This means that in the next 40, 60 or 80 years, depending on how population growth changes, world food production must be increased more than it was increased in the 12,000 to 14,000 year period from the beginning of agriculture up to 1975, just to maintain per capita food production at the inadequate 1975 levels.

Can this increased production be achieved? My direct and indirect involvement in the agricultural programs of the two most populous countries of the world--India and the Peoples' Republic of China--make me cautiously optimistic for the short term. Both of these countries have doubled their food production over the past two decades, but because of large and rapidly growing populations, have made, at best, only very marginal improvements in per capita production. Within the past year, India experienced the worst monsoon in 35 years but has pulled through this experience satisfactorily on the food front by drawing on large stocks of grain that had been accumulated from bumper crops in the two

previous years. I returned from China last night, where I learned that they have experienced the driest winter season in the North China Plain in 40 to 50 years. Despite this adverse weather, a large crop--but far smaller than the 1979 harvest--is expected. Had droughts, such as occurred in India in 1979 and in China in 1980, happened a decade ago, it would have been disastrous. But with the development of their water and irrigation facilities the adverse effect of the drought is buffered.

In summary, I believe world food production can be doubled in the next 40 to 60 years if governments give high enough priority and continued support to agriculture. It cannot be achieved with the miserly and discontinuous support that has been given to agriculture during the past 50 years. Moreover, much of the increase in world food production in the next several decades must come from increasing yields per hectare in Third World countries where yields are still low.

Future production increases, particularly in the Third World, will not come easily. There are no cheap technological fixes available for solving food production and security problems that must be faced by the developing nations in the years ahead. It will require massive investments in reforestation of watersheds to reduce erosion and siltification, to construct dams and reservoirs, canals to deliver the water, drains to prevent waterlogging and salinification, in fertilizer production facilities, in agricultural credit, in better storage and marketing infrastructure--if sufficient food is to be produced to feed the rapidly growing world's population.

We must expand our scientific knowledge and improve and apply better technology if we are to make our finite land and water resources more productive. This must be done promptly and in an orderly way if we are to meet growing needs without at the same time unnecessarily degrading the environment and crowding many species into extinction.

Producing more food and fiber, and protecting the environment can, at best, be only a holding operation while the "population monster" is being tamed. Moreover, we must recognize that in the transition period, unless we succeed in increasing the production of basic necessities to meet growing human needs, the world will become more and more chaotic.

"Human rights", a much discussed topic today, is a utopian issue and a noble goal to work toward. But in the real world it can never be achieved as long as hundreds of millions of poverty stricken people in the world lack the necessities of life. The "right to dissent" doesn't mean much to a person with an empty stomach, a shirtless back, a roofless dwelling, the frustrations and fear of unemployment and poverty, the lack of education and opportunity, and the pain, misery and despair of sickness without

medical care. My work has brought me into close contact with such people and I have come to believe that all who are born into the world have the moral right to the basic ingredients for a decent humane life. How many should be born and how fast they should come on stage is another matter. This later question requires the best thinking and efforts of all of us if, in my opinion, we are to survive as a world in which our children and their children and grandchildren will want to live--and more important, a world in which they will be able to live.

Those of us who work on the food production front, I believe, have the moral obligation to warn the political, religious and educational leaders of the world of the magnitude and seriousness of the arable land/food/population problem that looms ahead. If we fail to do so in a forthright unemotional manner, we will be negligent in our duty and inadvertently, through irresponsibility, we will contribute to the pending chaos.