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## FARMING FOR JOBS AND INCOMES

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### *Abstract*

*When a developing country improves its farm productivity, it at once increases job opportunities, both on-farm and in those rural industries that service farmers and process food. When poor people gain employment and a regular income, they spend most of their money on food, and their health and general standards of living improve. People with an adequate income have smaller families, and also show greater concern for their environments, the welfare of women, and children's education. Today's challenge is to find ways of improving farm production throughout the world, while still conserving the natural resources which will be needed for the survival of future generations. If this is achieved, everyone will benefit - and there is only one way of doing it. The new knowledge that is so urgently needed can only come from increased investments in research.*

### INTRODUCTION

"My deliberate opinion," wrote Arnold Bennett almost one hundred years ago, "is that it's a jolly strange world". I suggest that nothing has happened in our lifetime which would lead us to disagree with that opinion. Certainly we live in a world full of contradiction.

Governments in many countries are today doing their best to see that less food is produced, while those in many other countries are urging their farmers to produce as much as possible. Consumers in many parts of the world are increasingly preoccupied with their expanding waistlines and cholesterol levels, while populations elsewhere remain seriously malnourished and hungry. Commentators



continue to debate whether the world is short of food or whether there is a surplus.

Despite the many doomsday warnings that have been issued during the last 30 years, the fact is that more people are now well fed than at any previous time in human history. It is also true that, tonight, more people than ever before will go to bed hungry. Is it that we have failed to produce enough food for everyone, or is it that, although there is plenty of food available, it is not distributed according to need? Have we failed to give those who are hungry the opportunity and means of securing the food they want?

The present world food situation is clearly unsatisfactory, and the probability is that it will become worse in future. With the world population continuing to rise, with increasing numbers of people, particularly in Asia, able to afford more and better quality food, and with increasing urbanization, it is predicted that the world demand for food will increase substantially during the next 20 or 30 years. There is widespread agreement with the estimate of the International Food Policy Research Institute (IFPRI) that, to meet this expanding demand, world food production will probably have to double by about the year 2020.

The extent to which future needs will, in fact, translate into market demands will be influenced by a host of factors, such as world prices, exchange rates, distortions in international trade, and facilities for transport and storage. Ultimately, however, in the future, as in the past, individuals with money in their pockets will enter the market and buy food - before buying anything else, they will buy food. Except in cases of temporary disruptions and local disasters (including wars) those who remain chronically hungry will be those who are too poor to buy what food is available.

#### **POVERTY - THE ROOT OF ALL EVIL**

As well as being the root cause of hunger, poverty is also inextricably bound up with other major world problems. Can you think of any poverty-stricken community that is not characterised by large families, a disregard of environmental needs and human rights, a low status for women, high infant mortality, and poor standards of health and education, as well as inadequate nutrition? Conversely, can you think of any prosperous community that has not lowered its rate of reproduction, is not increasingly concerned about its



environment, human rights, and the status of women, and does not enjoy adequate health and education services, in addition to being well-fed?

The way we cope with the related global problems of population increase, environmental degradation and hunger will, more than anything else, determine the fate of the world during the next century - and this set of issues is over-arched by that of poverty.

According to the World Bank (1990), "the greatest numbers of the poor, including the very poorest, are found overwhelmingly in rural areas". Further, although poverty is growing most rapidly in Africa, more than 70% of the world's poor are to be found in Asia, including China and India. Because the rural poor are increasingly moving into towns and cities in search of employment, urban populations in many parts of the world are now growing faster than those in the countryside. It will take some time for urban poverty to exceed rural poverty in numerical terms but, because of the social implications of masses of poor, uneducated and unemployed people pouring into overcrowded cities, the consequences of urban poverty are likely to become increasingly obvious and politically important.

Most people are poor because they are landless, unemployed (or underemployed), illiterate and unskilled.

One way of breaking this impasse, which often proved effective in bygone days, was to settle the poor on appropriate areas of unoccupied land. However, in most countries, settlement schemes are no longer an option because, with increasing populations, appropriate spare land is no longer available. Nowadays we have no alternative but to use available natural resources (land, water and vegetation) more effectively - in other words to grow the proverbial two blades of grass where only one grew before.

When improved methods of farming transform subsistence peasant farms into productive commercial smallholdings, the most important result is a significant growth in rural employment. More jobs are even more important than more food, because they bring personal incomes and break the vicious circle of rural poverty.

#### **WANTED - A JOB**

Experience throughout the world has repeatedly shown that improved farming methods result in more jobs - both on farm and, particularly, in local villages and



towns where new service industries arise to provide farmers with necessary inputs (e.g. equipment, machinery maintenance, fertilizers, feeds, seed, livestock, and so on). Also new rural industries are developed to store, process, transport and market the increased production that is sold by farmers. This process, incidentally, is not only to be observed in less developed countries.

In countries belonging to the European Union (EU) the agro-industries, which handle and process 60% of all farm production, employ 2.5 million people and constitute the largest industrial sector in Western Europe. In developing countries, these industries exist in various forms (large scale, small scale, and cottage scale) and, in an increasing number of countries, they constitute an important sector of the national economy. For example, in India, employment in agro-industries that are mainly rurally based, has increased from 550 thousand to 1.2 million, constituting the largest single sector (17%) of India's industrial workforce. It has also been reported that some 10 million people or 19% of all factory employees, in various Asian countries, are employed in food industries. In lower income countries, employment in these industries has increased annually by almost 8% and some 75% of those employed are in small-scale industries in villages and country towns. Moreover, in many countries, women make up a considerable part of the workforce in the food handling industries - from 42% in Sri Lanka to 60% in Canada. As has been pointed out by Professor R.A.N. Edwards, Chairman of the Post-Harvest Committee of the International Union of Food Science and Technology:

"Most systems of food preservation and transport are readily adaptable in both small-scale and large-scale operation, to capital-intensive or labour-intensive processes, and rely upon both highly-skilled and modestly-skilled people. Since food processing is usually best when located close to the place of harvest, it provides employment of national significance in rural areas."

As rural incomes increase, so does the demand for non-farm goods and services, so that this, too, leads to more local employment. For example, experience in India and many other countries has been that between two-thirds and three-quarters of all new jobs have resulted from improvements in agriculture. In the words of Dr John W Mellor, a former Director General of the International Food



Policy Research Institute (IFPRI), growth in agriculture "is the only means by which the employment and incomes of the poor can be increased on a widespread basis".

Because most of the world's poverty-stricken live in the countryside and depend, directly or indirectly, on the farm sector for their employment and income, it is to be expected that improvements in farm productivity would be reflected in reductions of rural poverty - and that is exactly what is happening. In Indonesia, for example, between 1970 and 1987, rapid technological change in agriculture led to a surge in rural employment and poverty declined by 41%.

That improvements in agriculture lead to improvements in both personal incomes, and then to sectoral and national prosperity, should surprise no-one.

It was the archaeologist, Charles Reed, who observed in 1977 that:

"Only agriculture, with its pattern of population growth, urbanization, and economic surpluses, has produced civilization."

Gibbon made a similar point in his famous book on "The Decline and Fall of the Roman Empire" (1788).

"Agriculture is the foundation of manufactures, since the productions of nature are the materials of art."

### **LANDCARE**

Farming, and in this context I of course include forestry and fisheries, has always been, and remains, the most important of the world's primary industries - farming is the industry which initially drives the engine of economic and social progress, nationally and internationally. However, with growing populations, and the associated pressures on available land, water, capital, energy and other natural resources, it is increasingly difficult to identify management technologies that are both environmentally sustainable and highly productive.

The chemical and fossil-fuel intensive methods that the developed world has been using for the last 50 years are clearly not the answer. Yet, even while acknowledging the mistakes of the past and the limitations of the present, we would do well to maintain a proper sense of perspective and balance.

If modern farming technologies had not been introduced during the last 40 years, it would now be necessary, in order to match today's levels of food production, to crop about three times as much land as is currently under the plough. Inevitably



this would mean extending crop production further into fragile, marginal lands and into areas that are now natural forests. For example, according to Dr Dennis Avery, the Director of Global Food Issues at the Hudson Institute in Indianapolis, USA:

"Virtually all the gains from high-yield farming are ecologically sustainable. In fact, it is the low-yield farming which is unsustainable and therefore unsustainable. Low yield farming risks humanity and wildlife because it cannot support the impending human population, without more plow-down of wildlife habitat."

Dr Donald Winkelmann, the former Director General of the International Centre for the Improvement of Maize and Wheat (CIMMYT), has calculated that, if India had had to produce its 1991 wheat harvest with its average yields of 1961, it would have required 64.1 million hectares. In fact, using the improved germplasm and farming methods that were developed between 1961 and 1991, the higher yielding harvest of 1991 only required 24.1 million hectares. Thus some 40 million hectares, much of it inevitably marginal land, had been protected by the more productive technologies which have resulted from scientific research.

During the last ten years, and for considerably longer in some countries, farmers and scientists have been in the forefront of those who have urged a change in the policies and practices of natural resource management. National and international research policies have long since abandoned the notion that the only aim of agriculture is to produce more food. Nowadays, in addition to food production, the alleviation of poverty, the reduction of population growth, and the conservation of the natural environment are all recognized as interdependent and inseparable aims of agricultural research and development.

#### **RESEARCH: THE FIRST PRIORITY**

The trouble is that at present no one has a readily available and sufficient range of improved farming technologies that can be confidently offered to, say, nomadic pastoralists in Mongolia and sub-Saharan Africa (SSA), slash-and-burn cultivators in Amazonia and Central Africa, struggling rice or potato growers in the uplands of Asia and Latin America, or wheat producers faced with increased waterlogging and soil salinity in India and Pakistan. Of course, there has been substantial progress in the understanding of scientific principles of plant and animal biology,



and in the development of farming technologies - and this has already proved of tremendous benefit in many parts of the world. However, these important and encouraging advances, far from being adequate in themselves, are more correctly seen as indicators of the greater progress that is potentially possible in the future. The sum of available knowledge should justify confidence in the future ability of science and technology (including the social sciences and economics) to provide a steady and increasing stream of new ideas and practical innovations that are capable of being adapted and used successfully and safely by farmers, pastoralists, foresters and fishermen in all eco-regions of the world. This new and essential knowledge can only come from research.

As this new knowledge becomes available it still has to be disseminated and used. This necessarily implies that research activities need to be supported by adequate extension and farmer training services, as well as appropriate systems of land tenure, agricultural credit, marketing, pricing structures, and so on. In short, research is a necessary but not on its own a sufficient condition for progress.

No-one has described the vital role of agricultural research better than the keynote speaker who gave the first paper to this Conference, Professor G E Schuh. Several years ago (1988), Ed Schuh pointed out that:

"Simply put, agricultural research is vital because it is the source of new production technology, and new production technology is the source of economic growth. This is the true "miracle" of investing in agricultural research as the basis of economic growth ... Few means of economic development spread their benefits in such a broad way, and so much in favour of the poor."

#### **SUMMARY**

The challenge of the future is to devise productive agricultural systems, suitable for every eco-region, which are sustainable in all respects, environmentally, economically, socially and nutritionally. It is easy to devise low-input, low-output systems of farming, forestry and fishing which meet the needs of the environment. Likewise, it is a relatively simple matter, at least in the short term, to produce larger incomes, more food and increased employment through the profligate use of fertilizers, water, non-solar energy and biocides. The difficulties in formulating profitable, high-yielding and environmentally sensitive farming systems that will



endure should not be underestimated, but progress is being made. There is justification for believing that, as research further extends knowledge, it will be possible to meet this formidable challenge. However, to do this it is essential that the potential represented by the global agricultural research network is fully realized. This network truly constitutes our "lifeline to the future."

#### ACKNOWLEDGEMENT

The preparation of this paper has relied a great deal on information and arguments that are presented in detail in *"Feeding and Greening the World"* by D E Tribe, published in 1994 by CAB International, Wallingford, UK.