

FOOD AND POPULATION

THE UNEQUAL EQUATION

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If one is involved in food production, it naturally follows that one must be concerned about the land base upon which we depend for food and about the number of people that land base must feed, since 98 percent of the worldwide tonnage of food in 1975 was produced on the land. Anyone engaged in attempting to increase world food production soon comes to realize that the human misery resulting from food shortages, poverty, and world population growth are all parts of the same problem.

Growing populations demand more land, not only for food production but for other purposes as well. Moreover, soaring food requirements have led to excessive pressures on the land, and many of the techniques used by man to produce food, such as irrigation without drainage, terracing, fallow rotations, and shifting slash-and-burn cultivation are beginning to break down as population numbers force intensification of agriculture on existing cropland.

Unless food production and population growth rates are brought into better balance within the next several decades, the world will become increasingly chaotic. The poverty in many of the developing nations, already serious, will become unbearable. There is also the likelihood that standards of living in some of the affluent nations will stagnate or even, in some cases, regress.

Unfortunately, even in privileged, affluent, well-educated nations there has been more concern with symptoms of the complex malaise that threatens civilization than with the basic underlying causes.

We believe that this

approach will not solve the underlying problem. We must not be afraid or unwilling to recognize, confront, and effectively struggle with the primary underlying cause — the human population monster — which adversely affects many facets of life. The longer we wait before attacking the primary cause of this complex worldwide problem with a serious, intelligent, unemotional, effective, and humane approach, the greater will be the deterioration of the quality of life and the fewer of our present species of fauna and flora will survive.

Evidence indicates man or "near man" has been roaming the Earth for at least three million years. About 12 000 years ago humans discovered agriculture. World population then is estimated to have been approximately 15 million. With a stable food supply, population doubled four times to arrive at about 250 million by the time of Christ. Since that time, the first doubling — to 500 million — occurred by 1650. The second doubling required only 200 years. That was about the time of the discovery of the nature and cause of infectious diseases and the dawn of modern medicine, which soon began to reduce the death rate. The third doubling — to two billion — occurred in 1930, only 80 years after the second doubling. Then sulfa drugs, antibiotics, and improved vaccines were discovered, which again reduced death rates spectacularly. World population doubled again — to four billion people — in 1975.

It is obvious that the arable land/food/population ratio and the quality of life is worsening dramatically as the numbers of humans

increase. There are ominous signs that during the next several decades the world will face a worsening shortage of cropland on which to produce its food. In many densely populated countries there is little additional land suitable for agriculture that can be brought under cultivation. In fact, worldwide, there is probably more cropland being removed from agriculture each year than is being added. Expanding cities are expected to cover 25 million hectares of cropland by the end of this century. Although the loss represents only two percent of the current cropland under cultivation, the percentage of food production involved is likely to be substantially greater because cities are commonly built on the most fertile land. Moreover, much additional cropland is being lost because of deforestation, erosion, and desertification.

Growing problems in irrigated lands, which produce a disproportionately large share of the world's food supply, are extremely serious. In some key producing areas the diversion of irrigation water to non-farm uses is reducing potential food production. Although over half of the world's irrigation capacity — particularly in the developing world — has been developed during the last 25 years, waterlogging and salinity resulting from lack of provision for drainage are already impairing yields on millions of hectares. According to a recent UN survey, at least 20 percent of the world's croplands are losing topsoil or being otherwise degraded. These pressures are working to restrict growth in per capita cereal production today, and they

will be at least as strong, if not stronger, during the next 40 years.

As we look at the magnitude of the world food needs for the next half century, we are apprehensive. In 1975, when world population reached four billion, the world produced an all-time record harvest of approximately 3.3 billion metric tons of all kinds of food. It took some 12 000 years to gradually increase production to this record level. If human population growth continues at the same level as prevailed in 1975, population will double to eight billion in about 40 years. Consequently, food production must be doubled in the same period.

There is evidence that population growth is beginning to slow somewhat. But even if we assume that this reduced rate of growth will prevail, the necessary food production increases are staggering. In essence, these projections mean that within the next 40, 60, or 80 years — depending on how population growth changes — world food production must again be increased by at least as much as was achieved during the 12 000 years prior to 1975, just to maintain per capita food production at the inadequate 1975 level.

Can the production of food and fibre be doubled in the next 40 to 80 years? We are cautiously optimistic and believe it can, providing world governments give high enough priority and continuing support to agriculture and forestry. It cannot be achieved with the miserly and discontinuous support that has been given during the past 50 years. If disaster is to be averted, much of the

additional production in the next several decades must come from increased yields on land now under cultivation in Third World nations, where yields are still low.

There are no cheap technological fixes available for solving the food production and security problems facing developing countries in the years ahead. It will take massive investments — particularly in irrigation, drainage, reforestation, soil conservation, and flood control projects, in fertilizer production facilities, in agricultural credit, and in better marketing infrastructures. We must train more and better agricultural scientists, 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 fibre 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 and more equitably distributing the benefits to meet growing human needs, the world will become more and more chaotic and social and political systems will collapse.

The attainment of human rights in the fullest sense can never be achieved as long as hundreds of millions of poverty-stricken people lack the necessities

of life. Our work has brought us into close contact with such people, and we 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 latter question requires the best thinking and efforts of all of us if, in our opinion, we are to survive and leave a world in which our children and their children will want to live and, more important, be able to live.

Those of us who work on the food production front 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 our irresponsibility, we will contribute to the pending chaos. We are convinced that the amelioration and eventual solution of this complex problem is of the highest urgency. The imminence of disaster is before us. It is closer than most people realize, or are prepared to admit. □

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