

THE HUMAN POPULATION MONSTER



CENTRO INTERNACIONAL DE MEJORAMIENTO DE MAIZ Y TRIGO
INTERNATIONAL MAIZE AND WHEAT IMPROVEMENT CENTER
Londres 40, Apartado Postal 6-641, México 6, D.F., México. 1980.

THE HUMAN POPULATION MONSTER

By
Norman E. Borlaug, R. Glenn Anderson and
Ernest W. Sprague*

Because we have been primarily concerned with agriculture and food production for more than three decades, we have, by necessity, developed an interest in the broad fields of land use—or misuse—and in population growth.

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 per cent 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. In effect, they are different dimensions of the same triangle. 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 historical 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 more chaotic. Social, economic and political pressures and strife are building at different rates in different countries of the world, depending upon human population densities and growth rates and upon the natural resource and industrial bases that sustain the different economies. 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 retrogress. These terrifying human population pressures will adversely affect the quality of human life and the actual survival of many other

species.

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. In recent years many vociferous pressure groups, obsessed with the importance of single narrow issues, have beclouded the primary issues. The affluent nations, especially, seem to have become determined to attack all of these ugly symptoms by passing new legislation or filing lawsuits against companies, individuals, or various government agencies for polluting the environment or infringing on the right of individuals or groups. They add confusion rather than enlightenment to the issues.

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. Continued neglect may eventually lead to the destruction of civilization or even the disappearance of man.

Accelerating Pressures

There is still heated debate about the date man or "near man" appeared on the planet Earth. Evidence indicates he has been roaming the Earth for at least three million years.

About 12,000 years ago humans discovered agriculture and learned how to domesticate animals. World population then is estimated to have been approximately 15 million. With a stable food supply population growth rates accelerated. It doubled four times to arrive at a total of about 250 million by the time of Christ. Since that time

* Former Director, CIMMYT Wheat Program, currently Associate Director, Agricultural Sciences, Rockefeller Foundation and consultant to CIMMYT; Director, CIMMYT Wheat Program; and Director, CIMMYT Maize Program, respectively.

the first doubling—to 500 million—occurred by 1650. The second doubling required only 200 years to arrive at a population of one billion by 1850. 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. This doubling took only 45 years and represented an increase of 256-fold—or eight doublings—since the discovery of agriculture.

It is obvious that the arable land/food/population ratio and the quality of life, as well as competition among species, 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 moved from agriculture each year than is being added. Expanding cities are expected to cover 25 million hectares of cropland between now and the end of this century. Although the loss from this cause would represent only two per cent 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 to agriculture because of deforestation, erosion and desertification, as well as diversion for recreational uses and highways, airports, etc.

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 of these newly irrigated lands. According to a recent UN survey, at least 20 per cent of the world's croplands are losing topsoil or being otherwise degraded at a rate that will seriously undermine their productivity over the long run. Loss of soil fertility, shortage of energy and a host of other factors also threaten

agriculture. 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 forty 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, e.g. grains, pulses and grain legumes, tubers, vegetables, fruits, nuts, sugar, oil seeds, eggs, meat, milk, cheese and fish. It took from the beginning of agriculture and animal husbandry, some 12,000 years ago, up until 1975 to gradually increase production to the aforementioned 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, or by the year 2015 A.D.; 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, and the time to double to eight billion will increase by 60 or even 80 years to 2035 or 2055 A.D. respectively, (which we feel is optimistic) 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-year period from the beginning of agriculture up to 1975 just to maintain per capita food production at the inadequate 1975 level.

This is a tremendous undertaking, and of vital importance to the future of civilization. Failure to cope with it will plunge the world into economic, social and political chaos. This dilemma also clearly indicates the urgency of dealing effectively and humanely with the Human Population Monster.

Can the production of food and fiber 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 to agriculture and forestry 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.

Future production increases, particularly in

the Third World, will not come easily. 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—if sufficient food is to be produced to feed the world's people. 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 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 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. Once this occurs little can be done to assist in increasing agricultural production.

Civilization may collapse

“Human rights,” a much discussed topic today, is a utopian issue and a noble goal to work toward, but as with all such noble endeavors they must be accompanied by citizens’ responsibilities.

Nevertheless, in the real world, 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. The right to dissent? For whom—the elitist, the educated, the privileged? It 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 loneliness of sickness without medical care. 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, we 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 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.

