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Who Will Feed the Third World?

A Book Review by Elizabeth A. Brown

Ten years ago, traveling by train across China, I marveled at the vastness of the farmlands. Rice paddies stretched and climbed into the horizon, a sea of green dotted only occasionally with a farmer, an ox, a clump of houses. For hours the train rolled through fields of rice, wheat, beans, and more rice. Such bounty! Surely the "iron rice bowl" the Chinese boasted about would endure, strong and bottomless, for a long time.

Not so, say Lester Brown and Hal Kane, authors of *Full House: Reassessing the Earth's Population Carrying Capacity*. There's a hole in the bowl, and it's growing larger. Food shortages in China have already begun, and by the year 2030 China will need to import some 216 million tons of grain — more than the total of world grain exports today.

With world population growing by 90 million a year — 15 million in China alone — pressures are growing on the world's limited food supply. Who will feed China? Who will feed the world?

"In this ambitious book the authors project food supply and demand for the world ... to 2030."

The answer, according to Brown and Kane, is to pose another question: At what level of consumption? In this ambitious book the authors project food supply and demand for the world, including the 13 most populous countries, for the next four decades, to 2030.

Shortages loom large — far more ominous than projections made previously by the United Nations Food and Agriculture Organization (FAO) and the World Bank, which anticipate abundance. The disparity comes because those earlier projections assume that grain yield per hectare will continue to rise at the same rate for the next two decades as it has since 1960. In addition, those studies fail to include the rapid loss of farmland to nonfarm uses, where in China alone it's diminishing by 1 percent each year.

Brown and Kane argue convincingly, however, that farm yields have stagnated, and that much of the world's arable farmland is in imminent danger of being

overcultivated or lost to urbanization.

Grain yields per hectare have already begun to decline. From 1950 to 1984, world grain yield per hectare more than doubled, rising 2.3 percent per year; from 1984 to 1993, yields slowed to growing an average of only 1 percent per year, with outputs since 1990 actually declining.

The authors cite "fertilizer falloff" as the main reason for dwindling yields. Many governments (former U.S.S.R., India, China) have dropped fertilizer subsidies; many crops have become so highly fertilized (in the U.S., Europe, Japan, China, and the former Soviet Union), that they no longer respond to more. There are spots in the developing world that will produce more if they

are fertilized *and* irrigated. "But," the authors conclude, "unless someone can design new strains of wheat, corn, and rice that are much more responsive to fertilizers than those now available, future gains in grain output from rising use are likely to be modest... If large gains in food output cannot be achieved from using more fertilizer, where will they come from?" (p.131)

They probably won't come at all, the authors say, barring some unforeseen breakthrough in agriculture. Most countries are growing at capacity already. And those countries that aren't — the United States, India, and Iran — will find more than enough demand from countries with shrinking harvests.

Nor can the world expect to eat more seafood, as world catches peaked in 1989 and have been decreasing every year. And aquaculture, like cattle farming, uses too much grain to justify the amount of protein produced.

To muck things up even more, earth's deteriorating natural environment will impose its own limits on food output. Lost topsoil means fewer fertile soils; polluted air stunts the growth of plants; thinning ozone reduces photosynthesis and the production of plankton; heavy irrigation leads to salting and waterlogging; global warming is likely to reduce soil moisture in key growing areas, the

FULL HOUSE: REASSESSING
THE EARTH'S POPULATION
CARRYING CAPACITY
By Lester R. Brown and Hal Kane
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(Part of the WorldWatch
Environmental Alert Series)
250 pages. \$8.95

American midwest and the former Soviet Union.

"How is a government official going to convince a rural couple in a developing country that their family size will affect the world, and that they ought to care?"

Full House is crammed with figures and graphs, logically presented and readily explained. Still, the numbers are numbing: By 2030 the only country expected to be a net exporter of grain is the United States. The exportable amount, 82 million tons, (up from 76 million tons exported in 1990) couldn't begin to meet the needs projected for China (216 million tons), India (45 million), the former Soviet Union (25 million), Iran (32 million), Pakistan (26 million), Egypt (21 million), Nigeria (15 million), and Mexico (19 million).

How will 2.1 billion tons of grain in 2030 feed the anticipated 8.9 billion people?

Americans consume 800 kilograms of grain per year per person, compared with 400 kilograms in Italy and 200 kilograms per person in India. If all the world consumed the Indian rate of 200 kilograms, the authors say, the harvest would feed us all. "Whether or not the house is full depends on where we want to live on the food chain," they write.

Brown and Kane suggest a few steps to stave off the crisis. First and foremost, countries need to reassess population policies with an eye to "carrying capacity." They write:

Given the limits to the carrying capacity of each country's land and water resources, every national government now needs a carefully and adequately supported population policy, one that takes into account the country's carrying capacity at whatever consumption level citizens decide on.

Citizens need to be educated on the benefits of having smaller families. The authors suggest that couples shouldn't ask "How many children will I need for old-age security?" but rather, "How will the number of children I have affect their — and the world's — well-being?"

"At issue is how to balance the reproductive rights of the current generation with the survival rights of the next generation," they write.

Although the authors suggest ways to decrease fertility, we must ask if these ideas would really work. How is a government official going to convince a rural couple in a developing country that their family size will affect the world, and that they ought to *care*? Addressing the social causes of high fertility — the low status of women and illiteracy — is no small thing. How

are countries expected to reverse centuries of cultural discrimination against women? Why would a country that hasn't enough money to buy food decide to spend it on books?

Among other solutions, the authors propose: massive tree plantings to provide firewood and erosion control; adding a fossil-fuels tax to pay for the environmental degradation caused by burning them; giving the United Nations a mandate and funds to meet population goals.

There is much to be done. The authors have sounded the alarm. "The measure of individuals or nations is whether they respond to the great issues of their time," the authors write. "For our generation, the challenge is to reverse the deteriorating food situation, achieving a balance between people and food that is both humane and sustainable." ■