

Whatever Happened to the Green Revolution?

When food and politics mix, the hungry are not fed

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The United States, for humanitarian, political or military reasons has, over the past 15 years, donated or supplied on concessional terms 80% of all food aid available to developing countries from developed countries.

Early studies, based on experiences in India, indicated that neither local production nor prices had been adversely affected by the influx of free grain. But the results of recent research now cast serious doubt on the utility of food aid programs—and raise larger questions about the efficacy of charitable aid in general.

Domestic production of grains in Colombia, to cite only one example, has declined over 60% during the past 20 years in favor of imported grains. Evidence of this sort seems clearly to indicate that the economic decisions made by both donor and recipient of aid occur within a complex social and political framework which may well make them ineffective or even counterproductive.

It has long been true that food aid was what was shipped out of the United States when, on the one hand, the Department of State was looking to dispose of agricultural surplus, and, on the other, another nation was eager to cushion its own trade accounts.

Now, however, with the "right to food" becoming a legitimate topic of debate, changes are in the offing. One such change is embodied in the International Development and Food Assistance Act of 1975,¹ under which the U.S. Congress for the first time intends officially to direct its aid toward those nations which "increase their own agricultural production, with emphasis on development of labor-intensive, small farm agriculture." In other words, future food aid is to be aimed at those who are among the world's poorest,

since more than half of the total population in the developing world are small farmers.

Yet the unfortunate fact remains that the poorer nations are not doing much to help themselves. And indeed many food-short nations have consciously incorporated *disincentives* to domestic production in their import policies, a factor which at least partially explains the startling new figures about Colombia's grain production. In the early 1950s that country's grain imports accounted for 22% of total consumption; in 1971 they were 89% of consumption.²

Analysts of the Colombian statistics point out that, facing an uncertain world coffee market in the late '50s and early '60s, the Colombian government chose to raise revenues from imported surplus food aid grain, thus keeping grain prices to consumers low and increasing total net revenues to the government. By the time that policy was reversed in the early 1970s, domestic production had declined drastically and much of the potential benefit of the food aid program had been obviated.

Another element in the production decline was the fact that the real price of imported wheat dropped more than 20% because the U.S. changed the terms of offer, making concessional wheat more attractive. Moreover, the Colombian agency responsible for wheat marketing allowed the internal price of the grain to decline an additional 30% relative to the imported price, thus increasing the relative disadvantage of domestic to foreign producers of wheat.

Nine ways to rob Peter and pay Paul

It is evident that public (and, hence, price) policy signals are all-important inducements to economic

¹"International Development and Food Act of 1975," 94th Congress 1st Session H.R. 9005, in the Senate of the United States, September 11, 1975. Read twice and referred to the Committee on Foreign Relations.

²Leonard Dudley and Roger J. Sandilands, "The Side Effects of Foreign Aid: The Case of Public Law 480 Wheat in Colombia," *Economic Development and Cultural Change*, Vol. 23, No. 2, January 1975.

behavior and resulting social conditions. To state it even more simply, starvation and malnourishment are, to a notable extent, political choices.

In the developing world conditions of low-cost labor and high-cost capital exist. This relationship can be reflected either by price signals to entrepreneurs, who in turn employ relatively more labor and utilize imported technology more carefully (as in Korea and Taiwan); or it can be hidden behind protective policy barriers.³

Recent studies attempting to identify the types and degrees of disincentives to agricultural production, have shown how easily a well-intentioned policy can interfere with the allocation and availability of supplies to consumers.⁴

1. *Controlling the producer's selling price.* While the objective of such a policy may be a more equitable distribution of food, the fixing of prices below a certain level may discourage producers from expansion or from the use of more productive techniques and substances—irrigation, fertilizer, insecticides, pesticides, etc. In Zaire, for example, where 50% of palm oil production must be sold domestically at a loss, production has declined 25% over the past six years.

2. *Controlling the retail price.* Price controls designed to fight inflation or keep domestic food prices "cheap" actually have the effect of inhibiting what is really needed—more domestic production. Price freezes on beef in Greece in the early 1970s created both black markets and shortages. There are only two choices open to a developing country that needs to meet increasing demand for food: stimulate domestic production or import in the face of deteriorating foreign exchange reserves.

3. *Noncompetitive buying or procurement.* Procurement policies, under which a government is the sole buyer, can also have adverse effects on both producer and consumer. In Thailand, for example, rice producers receive about 20% of the world price for rice. By allowing an increase of 50% in the relative farm price, it is estimated that Thailand could double its total rice exports. In Burma, where 1974 incentives offered farmers included a 50% price boost for compulsory sales and a 100% boost for sales above the

³Gustav Ranis, "Technology Choice, Employment and Growth," Economic Growth Center, Yale University, 1970.

⁴A.A. Saleh, "Disincentives to Agricultural Production in Developing Countries: A Policy Survey," Foreign Agricultural Service, USDA, March 1975.

quota, rice production increased to a volume which—after official allowances for increasing reserves, and an unofficial portion smuggled to Bangladesh—made some exporting possible.⁵

4. *Export controls and export taxes.* Such policies can discourage purchases by foreign buyers, which thus decreases foreign exchange earnings and lowers the expectations of domestic producers about future demand. In Argentina, where domestic beef price rises have caused export declines, the government is attempting to stabilize its beef export market by varying export duties and subsidies, thus forcing quantity adjustments into the domestic consumption patterns.

5. *Exchange rate controls.* Brazil, for example, overvalued its currency to take advantage of reputed inelastic foreign demand for its coffee. Unfortunately this had a net adverse effect on other products with which Brazil had a comparative world trade advantage. A system of multiple exchange rates exists now; it tends to complicate farmers' decisions about new investments and engenders uncertainty among producers.

6. *Importing for sale at subsidized prices.* This runs the risk of lowering prices in the domestic market, which in turn discourages home country producers from investing in new seed varieties and other steps that might improve production. In Spain, for instance, the subsidization of imported beef severely depressed domestic livestock production.

7. *Restricting credit, land tenure, farm size.* To compensate for producer and consumer price controls, the government of Indonesia offers rice producers subsidized credit. Indonesian banks, however, view small farmers as high-risk borrowers; thus only the larger farmers benefit from the subsidized financing, the small farmers continuing to suffer chronic credit problems.⁶ A land tenure law in the Dominican Republic limits rice land to 80 acres. This, coupled with producer price controls, has turned the country from a rice exporter to a rice importer in only a few years. In Mexico, large farms account for 80% of production increases. It

⁵M.C. Tun, "Burma: Regaining Status as a Rice Exporter," *Far Eastern Economic Review*, September 1975.

⁶Production increases are, however, being achieved through massive "guidance" efforts by the government of Indonesia in conjunction with the World Bank. These efforts are increasing both yields and acreage. *Annual Report 1974*, The World Bank, Washington, D.C.

stands to reason that any land redistribution programs—at least those that lack a supply of credit and capital and management training programs—are likely to impede food production.

8. *Restricting domestic distribution.* Such policies obviously tend to discourage producers. India's policy limiting the movement of agricultural products from one district to another probably amplified the food shortage there after the 1974 drought. Indonesia prohibits all inter-island rice shipments except those that are government-controlled.

9. *Expropriation or nationalization of food industries.* For example: Peru's nationalization of the fishmeal and fishoil industry in 1973 affected five U.S. firms, but left Peru's own food fishing industry unscathed. The government of Haiti expropriated sugar estates early in 1973, which had the coincidental effect of revoking a contract the government had with an oil seed storage and crushing plant. However, instances of this sort, or of contract or concession cancellation, renegotiation and forced sales, have on the whole declined—from 78 between 1972 and 1973 to 42 in the past 18 months.

Cash crops vs. food crops

The plantation system, established hundreds of years ago, has always emphasized the production of income for the colonizers over food for the general citizenry. Thus, the "estate" or "cash" crops grown—tobacco, tea, coffee, cotton, etc.—made the landowners wealthy and the rest of the people hungry.

Even as developing countries become independent, food crops continue to be secondary to what could be grown and readily sold for foreign currency. Sales of coffee are still the economic life-blood of numerous developing nations. Indeed, according to the Food and Agriculture Organization (FAO), nonfood agricultural production is increasing at a faster rate than food crop production (and at the same time using land and materials that might otherwise be put to the production of food). Mali, one of the Saharan nations most severely affected by drought, bears out the FAO observation. Marketed food for domestic consumption in that country decreased from 60,000 tons in 1967 to 15,000 tons in 1973, while export crops, particularly peanuts, increased markedly.

"Disputes Involving U.S. Foreign Direct Investment," United States Department of State, Bureau of Intelligence and Research, Washington, D.C., 1975.

Wanted—better management

There is no question that developing countries have significant agricultural capacities. What they lack are more rational, long-range priorities for the use of their agricultural land—something which requires the resolution of usually volatile political issues.

They need, too, to change some age-old attitudes toward the role of women in agriculture. In most developing nations it is women who are the subsistence farmers, cultivating food by traditional, simple, manual methods; men are usually occupied in the cultivation of cash crops, aided by relatively modern technology. In Africa, for example, it has been found that women are responsible for from 50 to 70% of the agricultural work, and it is mostly subsistence farming. In Asia, by contrast, where farming is done predominantly by men, women are responsible for less than 20% of the agricultural work.⁸ It is not surprising to find that rates for male agricultural productivity—and concomitant income and status—are higher than those for women.

This productivity bias, begun under European administrators in Africa, has carried over into modern service extension practice. According to a 1972 report of the United Nations:

In nearly all countries agricultural training at low, middle and high levels is given only to men who, in turn, overlook the women farm workers and address their instructions to male farmers rather than to the women who are doing the work. Rural training of women is nearly always limited to training in home economics of one type of another.⁹

Perhaps even more disturbing than misguided agricultural training policies and misapplication of technology, however, is a notable lack of "on-location" research. The United Nations has estimated that from two to three times as much productivity growth can be obtained per dollar of research than through any other form of investment by a developing nation.¹⁰ Yet only 2% of the world's agricultural research is conducted in developing countries (where two-thirds of the world's population live). In the developed world, average ex-

⁸Esther Boserup, *The Role of Women in Development* (St. Martin's Press, 1971).

⁹United Nations *Report of the Interregional Meeting of Experts on the Integration of Women in Development*, ST/SOA/120, June 1972.

¹⁰United Nations *The World Food Problem*, E Conf. 65/4, pp. 84-98.

penditures for agricultural research amounted in 1970 to approximately 1% of the agricultural segment of the gross domestic product. (Japan's at 2%, was the highest expenditure; U.S. research budgets have remained constant for a decade.)

What kinds of research are needed? The large land areas in sub-Saharan Africa—an area of approximately 7 million square kilometers, i.e., slightly larger than U.S. agricultural land—could be freed for cultivation if the tsetse fly could be eradicated. The cost of eliminating the fly, which carries African trypanosomiasis, a disease similar to sleeping sickness, is estimated at \$2 billion.

There is also an urgent need for better rodent control. The current world rat population is, according to FAO estimates,¹¹ some 4.2 billion. They eat or contaminate about 42.5 million tons of food annually, at an estimated cost of \$17 billion, and the bulk of their damage is inflicted in poor, tropical areas.

Solutions to particular agricultural problems in one country may lie in technology already in use in another country. The Japanese Institute of Agricultural Machinery, for example, has developed a simple paddy-straddling machine which is put to use during seasonally acute labor shortages. Such a device, borrowed and adapted as necessary, could increase rice productivity for developing nations just as it has for Japan.

Some reasons for hope

Obviously, information about such potentially useful agricultural devices and techniques needs more efficient dissemination. Adaptation and implementation of borrowed technology or indigenous inventions require organization and leadership. The 29-member Consultative Group on International Agricultural Research (CGIAR),¹² established in 1974, is beginning to provide this. With an initial funding of \$34 million, CGIAR created eight international centers, each located in a developing nation, and each is actively applying the results of its research to regional or international agricultural problems.

Its work is cut out for it. The green revolution, about which we have heard so much, has, to be sure, had its successes, making significant improvements in agricultural productivity through the application of new strategies such as intercropping, the alleopathic

combination of crops, and mechanized methods of reducing pests and weeds. Vast amounts of research and money have focused on cereals—governments have granted them price supports, have initiated purchase programs, guaranteed credits to farmers, made special seed and fertilizer allocations, etc.—and the expected has occurred: production levels of cereals increased 25% between 1961 and 1972.¹³

Ironically, however, some food deficiencies are being artificially increased at the same time cereal production has improved. Per capita pulse yields over the same 11-year period declined nearly 40%. These crops—lentils, garbanzos, and various kinds of peas and beans are staples in poorer countries. Their protein and vitamin content is much higher than that of cereals, and indeed they supply much of the protein that wealthier countries derive from meat and other sources of animal protein. To compensate, then, for the drastic decline in the production of pulses, an even greater increase in the production of the relatively less nutritious cereals is required.

Yet there are reasons for optimism. A program initiated by the Philippine government (in conjunction with the University of the Philippines and the International Rice Research Institute) has brought that country close to agricultural self-sufficiency.¹⁴ During the 1973-74 growing season, local and rural banks joined with branches of the Philippine National Bank and agricultural credit administration to increase credit by 329%; they granted crop loans without collateral to more than 600,000 small farmers (with plots averaging 2.3 hectares). In order to qualify for the loans the farmers were required to organize themselves into mutual liability groups in which each member assumes partial responsibility for the potential default of another in the group.

At the same time, over 3,000 government field technologists worked intensively to improve the yields of some 900,000 rice farmers (who represent 56% of total Philippine production). The program emphasized simple irrigation projects, but it also subsidized one-half of the rise in price of fertilizer. Additionally, the domestic market for rice was encouraged by government decision to require foreign enterprises in the Philippines to purchase 50 pounds of rice per month per worker, either by import or contract with local producers. ■

¹¹"Of Rats and Men," *Ceres: FAO Review on Development*, January-February, 1975.

¹²Membership includes UNDP, FAO, general foundations and 13 countries.

¹³C.F. Gallagher, "Food and the Future," *Common Ground*, Vol. 1, No. 3, July 1975.

¹⁴A.R. Tanco, Jr., "A Philippine Success Story," Summary Report: 10th Asia Pacific Food Production Conference of the International Minerals and Chemical Corporation, Tokyo, 1974.