High Nutrition-Low Cost Foods: Their Impact in Developing Countries

At the SOS/70, the Third International Congress of Food Science and Technology, held in Washington, D.C., August 9–14, 1970, A. L. Elder and S. M. Weisberg presented a paper reporting some findings of attempts to market high nutrition-low cost foods in the developing countries.

"Many constructive and concise recommendations for averting the nutrition crisis of the developing countries may be found in a report submitted in July 1967 to the Economic and Social Council of the United Nations. This landmark report, "International Action to Avert the Impending Protein Crisis," merits close study.

A large number of programs are aimed at the survival problem. This alone makes the evaluation of the impact of such programs most difficult. Attempts must be made to evaluate both the short and long term impact of the programs, emphasizing the successful ones and discarding those of little value.

The permanent successes have been few. The League for International Food Education has been conducting a survey to help determine the reasons for success of failure.

Factors Identified for a Successful Enterprise

1. *Product Attributes.*
   - —High nutritive value.
   - —Product so designed as to really meet local acceptability requirements.
   - —Food should resemble a traditional accepted product with respect to taste, texture, odor, etc. Example: Vita-Bean (soymilk), now produced as a sterilized product sold in Tetra-Pak containers, but formerly made fresh at home and consumed daily as made.
   - —Long shelf life, unaffected by severe climatic conditions; preferably no refrigeration requirement.
   - —Easy handling and storage.
   - —No requirements for additional preparation.
2. *Marketing Considerations.*
   - —Product ready availability needed.
   - —Taste acceptance, packaging, and price should preferably appeal to *all* segments of the population in order to achieve a volume of business that can support a private enterprise.
   - —Sustained advertising needed.
   - —Education as to product merits needed.
   - —Product must be low-cost in relation to income.
   - —Food design problems must be solved on a culture by culture basis. No universal answers, only many local ones.
   - —Commercial marketing know-how geared to large scale production may sometimes be needed.
   - —Product should be designed to invite repeated buying.
   - —Consumers must have some money as a medium of exchange.
   - —Dogged persistence and patience needed.
3. *Production Requirements.*
   - —Private industry production is preferable.
   - —Distribution of ingredients and finished product must be such as to permit movement from surplus food areas to scarcity areas.
   - —Adequate processing facilities are needed.
   - —Food ingredients should be in-country available.
4. *Institutional Support.*
   - —Very desirable to incorporate in-school feeding and other institutional programs.
   - —Support by government nutrition and medical agencies essential.
   - —Support by food technology and nutrition institutions essential.
5. *Interdisciplinary Approach.*
   - —A major element in success is the simultaneous threefold approach of the nutritionist, the food technologist, and the marketing expert.

Factors Identified as Responsible for Failure to Succeed

- —Price of food too high.
- —Lack of cooperation from national authorities.
- —Unwillingness of consumers to pay for nutritional advantages.
- —Duties, government regulations, and government red tape.
- —Unstable currency.
- —Inability to obtain local financing.
- —Public apathy.
- —Political interference.
- —Product resembled a low-cost common product and prestige identity was not established.
- —Package was attacked by insects and rodents.
- —Product had poor shelf life.
- —Product had one or more defective organoleptic properties.
- —A food product with a poverty image will be poorly accepted.
- —New food products must be pre-sold on a status basis.
- —Archaic business practices hinder new product acceptance.
- —Interest rates on capital, needed for establishing a food industry, in some developing countries may run between 25–30%. It is thus necessary to bring in capital from areas where the cost of the money is less.
- —Basic food ingredients, such as soybeans, may cost several times as much in the developing countries as in the U.S.A. because of poor farming and poor yields.
- —The users of basic food crops may need to supply field service to insure the presence of a continuing supply of the crop.

Most of the early attempts at formulating high nutrition low cost foods resulted in rather rudimentary ingredient mixtures, only a little way removed from modern day complete animal feed formulations. Now, there is a new trend toward "second generation," more sophisticated food products, such as beverages, pasta products, biscuits, confections and snacks. Realization has gradually come that certain food items carry an aura of status which seems to be universally sought by people.

It has also become increasingly clear that if new types of high nutrition foods are to achieve commercial success, effective advertising and marketing procedures must be applied. This is another way of saying that ways must be found to communicate with people and change their deeply ingrained eating habits—at least to some extent. This is a most difficult task in rural areas where communication of any kind is hard to achieve.

Dramatic progress has been made in producing improved varieties of corn, rice, and cottonseed. In the case of corn, it is now possible to obtain greatly improved protein quality and substantial improvement in protein content; in the case of glandless cottonseed, there is at hand the prospect of non-toxic high protein cottonseed flour for human use. Wheat and rice varieties producing greatly increased yields are already being effectively used in the developing world. Further genetic selection may well lead to protein quality improvement in both rice and wheat, along with improved yields.

Not only will these improvements result in better basic food crops, but in turn such nutritionally improved crops will make easier and less expensive the formulation of low cost high nutrition foods.

Basic food fortification is another recent trend, where, at a minimum cost, needed amino acids, minerals, and vitamins can be added to a widely used basic food such as wheat flour, corn, or rice, with little or no change in the organoleptic properties. Thus, virtually no demand is made to learn a new food habit. In this way, the cost burden imposed by advertising may be minimized. Several large scale feasibility studies on fortification are now underway in developing countries.

In many cases, pre-existing unfavorable factors may clearly indicate that a food enterprise for profit is not yet

(Continued on page 242A)

• *High Nutrition-Low Cost Foods . . .*

(Continued from page 241A)

feasible. In such cases, government and voluntary agency programs dispensing local or donated foods will be (as it has been) indispensable. It is to be hoped, however, that while the donation programs continue, the recipient country will organize itself on a national basis to provide a favorable climate for private food enterprises to develop. These can and should supply low cost high nutrition foods for those most in need.

Data on the volumes of CSM (Corn-soy-milk), non-fat dried milk solids, and WSB (Wheat-soy-blend) that have been donated by the United States to developing countries under PL 480 Title II show, using some estimated figures for 1970, that 7.18 billion pounds of nonfat dry milk solids will have been shipped by the end of 1970, 1.07 billion pounds of CSM, and 17.2 million pounds of WSB. Data for shipments of milk powder date back to 1955, CSM to 1967, and WSB to 1969. There can be no reasonable doubt that these shipments have been of great value, especially for maintaining the health of children. The development of successful high nutrition low cost food enterprises continues to be slow and frustrating. Nevertheless, some relatively new factors can now be identified which seem to indicate better prospects in the future than in the past for marketing successful high nutrition low cost foods in the developing countries. Among these are:

—The considerably reduced cost of key nutrients for fortifying basic foods (i.e., amino acids, vitamins and minerals.
—Increased recognition by responsible government agencies of the permanent crippling effects of malnutrition, with an increased willingness for improved priority for food industry development.
—The growing involvement of important food industries from the developed countries in launching food enterprises in the less developed countries.
—The proliferation of nutrition and food technology research and teaching institutions in the developing world which can now supply some of the necessary homegrown technology.
—The increasingly sophisticated food processing, marketing and nutrition knowledge and support provided by UNICEF, WHO, FAO, U.S.D.A. and U.S. A.I.D., the development agencies of other governments, and the voluntary organizations, such as CARE, the Peace Corps, VITA, L.I.F.E., the voluntary church agencies, etc.
—The development of high yielding strains of rice and wheat, as well as improvement in the protein quality and content of basic widely grown crops, e.g., corn.
—The prospect of new sources of relatively low cost protein such as petroprotein and fish protein concentrate, which can eventually be used to fortify acceptable foods.

However, full advantage in an organized manner must be taken of this newer knowledge. It should be obvious that criteria must be established for measuring the impact of high nutrition low cost food projects. Now is no time for empty promises, false hopes and false publicity programs, for they will not fill hungry bellies. Give-away programs cannot provide a long-term solution. In the past, individuals associated with food production have been considered as being in a low prestige vocation. For those who go to bed hungry every night and finally die of starvation, the Science of Survival is an elite profession. We are managing to survive the chemical, antibiotic, atomic and space ages. We have the technical know-how for a science of survival but how-to-do is the unsolved problem of today and the available time grows short.

For additional data, contained in Tables, write: Dr. S. M. Weisberg, Executive Director, League for International Food Education, 1155 Sixteenth Street, N.W., Rm. 705, Washington, D.C. 20036.