

NUTRITION AND AGRICULTURAL DEVELOPMENT

Significance and Potential for the Tropics

Edited by

Nevin S. Scrimshaw

Massachusetts Institute of Technology

and

Moisés Béhar

World Health Organization

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Preface

The articles in this volume were presented and discussed at the Symposium on Nutrition and Agricultural and Economic Development in the Tropics, held in Guatemala City December 2–6, 1974, to celebrate the XXVth Anniversary of the Institute of Nutrition of Central America and Panama (INCAP). This Institute was an early manifestation of the movement toward integration of the six countries of the Central American Isthmus. When a cooperative effort to study, and look for solutions to, the prevailing nutritional problems of the populations of these countries was first proposed in 1945, it seemed almost utopian. However, the Pan American Health Organization convened a meeting in Guatemala City in February, 1946, at which the idea was discussed and approved by the representatives of the Ministries of Health of all six countries.

The mission entrusted to INCAP was the achievement of three essential objectives: to study the nutrition problems of the member countries; to seek ways and means of solving them; and to provide member governments with advice and assistance in applying the measures best calculated to solve those problems. The following year, Guatemala, Honduras, and El Salvador ratified the agreement and began paying annual contributions of \$8,500 each.

From the very beginning, the basic purpose was to develop the internal capabilities of the countries to determine and solve their own nutritional problems, with the Institute acting as a technical supporting agency. Activities were to be integrated. In 1948, recent graduates from the local universities of Guatemala, Honduras, and El Salvador were selected and trained for one year in the United States in clinical nutrition, food chemistry, and nutrition and dietetics, to form the initial nucleus of the scientific staff.

INCAP was inaugurated on September 15, 1949, with nine Central American professionals from three countries. It was a modest start in a tin-roofed adobe building in the Botanical Gardens, provided by the Government of Guatemala, but the group was young, enthusiastic, dedicated, and hardworking. The other three countries of Central America joined subsequently: Nicaragua in 1954, Costa Rica in 1955, and Panama in 1956. As each country joined, additional young professionals from each joined the INCAP staff or were sent to the United States for advanced training.

The W. K. Kellogg Foundation gave an initial grant of \$15,000 per year for three years to PAHO to support its administrative participation in INCAP, provided fellowships for the necessary training of professionals, and donated \$50,000 for equipment and supplies, supplemented by a generous grant to establish a library with the major current nutrition books and journals. These funds supplemented the \$25,500 for the first year's budget derived from the country's quota.

The annual quotas per member country were increased to \$12,500 in 1949, \$17,500 in 1956, \$25,000 in 1964, and \$62,424 in 1967. It was soon realized that larger quarters would be needed, and the Government of Guatemala constructed a modern, three-story building on the outskirts of Guatemala City, which was inaugurated September 15, 1954. In the years since, a clinical research center has been added and an experimental farm for work with large animals was opened in 1961. A second, larger three-story building was completed in 1972, and a pilot plant for food technology was constructed in 1973.

In 1971, the contribution system of the member countries was adjusted to a total of \$250,000, with a quota from each country proportional to its economic capabilities. With expiration of the initial grant from the W. K. Kellogg Foundation, the member countries asked PAHO to continue administering the Institute on their behalf, and PAHO contributions gradually increased to a present total of nearly \$600,000 per year.

In cooperation with the national health departments, the first years were devoted to epidemiological studies of the nature and magnitude of the nutritional problems of the population and to completion of an analysis of the nutritional value of Central American foods. As local problems were revealed, efforts were initiated to find solutions within the resources and local characteristics of the countries. Progressively, new personnel were recruited locally and trained both at INCAP and in the United States. A strong program of research developed as the basis for training and advisory responsibilities to its member countries.

From the beginning, INCAP was heavily dependent on outside assistance for its research program. The first research grants came from the Nutrition Foundation and the Williams-Waterman Program of the Research Corporation. Subsequently, major research support was provided for various projects by the U.S. National Institutes of Health and many other sources. In its 25th year, INCAP received approximately \$2,250,000 in research grants or contracts from different sources.

The *research programs* of the Institute were established to obtain a better understanding of the epidemiology and effects of the more important nutritional deficiencies found in the countries—protein-energy malnutrition, endemic goiter, vitamin A deficiency, and nutritional anemias—and to search for the means to correct them. From an initial emphasis on food analysis, food habits, and clinical

nutritional status, the program expanded into agricultural sciences, food safety, social anthropology, and, more recently, economics, in order to understand better the complex food and nutrition problems needing correction.

The *training programs* of INCAP started with ad hoc or in-service training in Guatemala of the personnel working in the member countries, and developed progressively into short courses and workshops for field training to complement the background and experience of key personnel (physicians, nurses, teachers, agricultural extension workers, nutritionists). Finally, in agreement with the other Central American universities and in cooperation with the University of San Carlos, Guatemala, formal courses leading to academic degrees were developed.

At present, the following academic degree programs are offered at INCAP. A four-year undergraduate program for the training of nutritionists, and graduate-level courses leading to a master's degree in the following four areas: Public Health, with emphasis on nutrition and maternal and child health; Food Science and Technology; Food Science and Animal Nutrition; and Biochemistry and Human Nutrition. In addition, students are still received for ad hoc in-service training in the different areas of INCAP competence. An average of 150 students are enrolled every year in these training programs.

The *advisory services* started with technical cooperation from INCAP headquarters staff to the Ministries of Health of the member countries, in each of which a department of nutrition was created, largely utilizing personnel whose training was provided or arranged by INCAP. Progressively, this technical cooperation was expanded to other ministries of the member countries, especially those of agriculture and education, as well as to the universities and to private industry. More recently, it extended to the newly organized national planning commissions.

The objective has always been to help the countries develop their own technical capabilities, their own nutrition programs, and to assist in training the personnel needed for this purpose. In this way, INCAP has worked, not as an outside agency telling the countries what to do, but rather as a body that has collaborated with them in defining their problems, helping them to decide what could be done to correct them, and training their personnel to do it. Meanwhile, it has undertaken the technical work needed to support this purpose, with the cooperation, wherever appropriate and convenient, of other national or regional Central American institutions.

Among the specific accomplishments of INCAP are the following:

1. Complete and detailed studies of the nutritional status and dietary habits of the populations of the six member countries.
2. The completion of a composition table for the foods of Central America and Panama, which later formed the core of a Latin American Food Composition Table prepared by INCAP with consultant help.

3. Better understanding of (a) the effects of pre- and postnatal malnutrition on growth and development of children, including learning and behavior; (b) the interactions of nutrition and work performance of adults.

4. Better understanding of the epidemiology of protein-calorie malnutrition, including the role of infections.

5. Improved methods for the treatment and rehabilitation of malnourished children.

6. Development and practical application of the principle of combining different plant sources to make highly nutritious, low-cost foods such as Incaparina.

7. Development of original methods of food fortification, including the iodization of moist, unrefined salt with potassium iodate and the fortification of sugar with vitamin A.

8. Utilization of local products and development of improved management systems for animal feeding, including the use of cottonseed meal in monogastric animals, feeding systems for raising calves with little milk, and the use of available waste products and by-products for animal feeding.

9. Development of principles and materials for nutrition education and for the teaching of nutrition at various levels.

10. Development and application of new methods for assessment of the nutritional status of population groups.

Equally important, however, are the contributions of INCAP toward a better understanding of the food and nutritional problems of communities; to recognition of their public health and social importance; to knowledge of what can and should be done about them; and to creation of an awareness of and interest in these subjects on the part of national officials, university professors and other influential citizens, and the international community.

Although INCAP was created for, and maintains, a primary responsibility for the six member countries, it also helps the food and nutrition programs of other countries in the Latin American region and the world by its training and research programs and, through PAHO and WHO, by advisory services.

During its first 25 years, more than 1600 students have passed through INCAP's classrooms and laboratories, and its staff and students have contributed over 1500 scientific publications. Starting from a small number of workers in a limited number of disciplines, its staff now includes 60 specialists in agronomy, food science and technology, microbiology, physiology, biochemistry, general medicine, pediatrics, gastroenterology, dietetics, human and animal nutrition, social and physical anthropology, psychology, economics, education, statistics, systems analysis, communications, and library sciences.

At present, its annual budget is over \$3 million, and it operates in modern and ample buildings on the outskirts of Guatemala City, with excellent laboratories of biochemistry, microbiology, virology, tissue culture, food chemistry,

work physiology, and hematology, plus a pilot plant for food processing, a computer center, teaching laboratories and classrooms, an animal colony for small experimental animals, an excellent library with more than 30,000 volumes that also receives more than 500 journals, and a clinical center especially equipped for metabolic and clinical investigations. It has, in addition, an experimental farm for agronomic research and studies in large animals, as well as eight field stations located in different ecological areas for epidemiological and other studies in human populations.

INCAP has been a highly successful venture, developing in 25 years from a very modest attempt at international cooperation among six small countries, into a large and strong institution that has made significant contributions in the field of human nutrition, not only to its member countries, but to the world at large. The following factors that contributed to its development are particularly worth noting: well trained scientific personnel, mainly from its member countries, working with enthusiasm and dedication; the utilization of problem-solving research as the basis for its advisory services and training programs; and a multidisciplinary and multisectorial approach to the problems of food and nutrition. Of great significance also was the fact that it was able to utilize the best available knowledge and expertise from around the world by bringing experts to advise on its programs from a variety of fields, either as consultants or as members of its Technical Advisory Committee.

The technical, administrative, and financial support of the Pan American Health Organization Regional Office for the Americas of WHO has been fundamental, as well as has the support from many fund-granting institutions. The Institute is especially indebted to the W. K. Kellogg Foundation, The Nutrition Foundation, The Research Corporation, the Josiah Macy, Jr., Ford, Rockefeller, and Nestlé foundations, the U.S. National Institutes of Health, the International Committee on Nutrition for National Development, the U.S. Agency for International Development, the International Development Research Centre of Canada, UNICEF, and WHO.

With INCAP's help, the countries of Central America have made significant progress in the understanding of the nutritional problems of their populations and in the control or alleviation of some of them. Unfortunately, because of economic, social, and political factors in Central America, malnutrition is still a serious problem in the area, and present world conditions may aggravate the problem further. Clearly, the nutritional situation would have been far worse in a number of ways without INCAP-sponsored efforts, such as salt iodization, flour fortification with B vitamins and iron, the development of Incaparina and other weaning foods, and provision of nutrition education and incorporation of nutrition in public health programs.

In INCAP, the governments now have at their service a strong and able technical institution on which they can count for sound advice and help in

dealing with food and nutrition problems. In addition, they have available well-trained personnel in the field, and the facilities of INCAP for the training of more as needed. The main limitations will continue to be of a socioeconomic and political nature, and INCAP is now devoting considerable effort to assisting countries to make improved nutrition one of the objectives of their social and economic development and to encourage them to include nutritional considerations in their national development planning.

The Central American area can produce the food it needs, and it has the human and material resources for accelerated social and economic development. We are confident that INCAP will play an increasing role in the efforts of its member countries to improve the nutritional and health status of their populations, and that its work will continue to be of value to Latin America as a whole and to other developing regions.

Dr. Nevin S. Scrimshaw
Director, 1949–1961

Dr. Moisés Béhar
Director 1961–1974

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