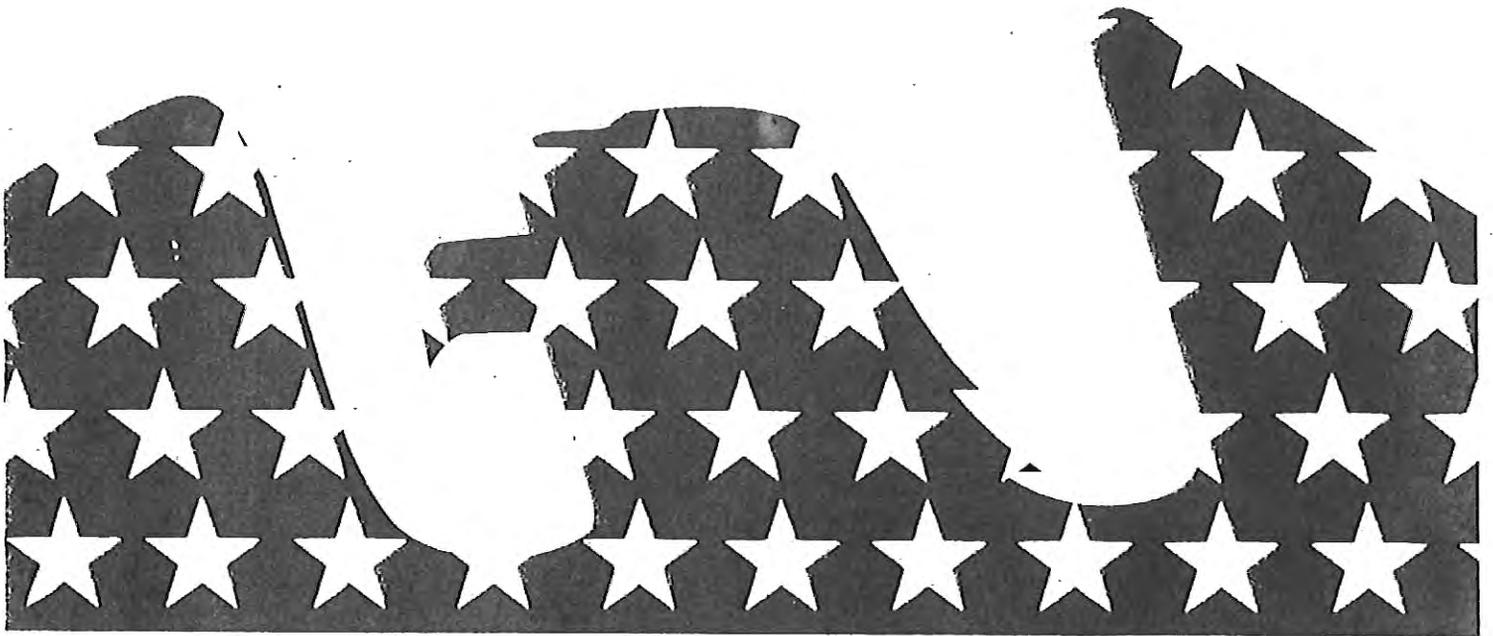


# A.I.D. Policy Paper

## NUTRITION



U.S. Agency for International Development  
Washington, D.C. 20523

May 1982



**A.I.D. Policy Paper**

# **Nutrition**

**Bureau for Program and Policy Coordination  
U.S. Agency for International Development  
Washington, D.C. 20523**

**May 1982**

## TABLE OF CONTENTS

	Page
Executive Summary	i
Preface	ii
I. Introduction	1
II. Objective of the nutrition policy and its accomplishment	2
III. Elements of the policy	2
A. Problem identification	2
B. Designing programs to address nutrition problems	4
1. Agriculture and Rural Development	4
2. Health	6
3. Food Assistance	7
4. Population	8
5. Education and Training	8
C. Targeting based on nutrition	8
D. Evaluating nutrition impacts	9
E. Complementing sectoral programs with nutrition projects	10
F. Utilizing the private sector	10
G. Improving host country policies	10
H. Coordination	10
Conclusions	11
Selected Bibliography	12

## Executive Summary

Estimates indicate that six hundred million people in less developed countries (LDCs) are in danger of not getting enough to eat. As a result, their productivity, health, and life expectancy are jeopardized. If the U.S. is to make progress toward helping LDCs improve agricultural production, economic performance, and human potential, nutrition must be included as a critical input as well as an essential output of development programs. Most of A.I.D.'s development assistance either affects health or food consumption or relies upon nutritional well-being to achieve development objectives. For this reason, it is of greatest importance to give increased attention to opportunities for improving the nutrition impact of sectoral policies, strategies, programs, and projects.

This policy paper reviews the justifications for U.S. investment in improving nutrition in LDCs and sets out some policy guidelines for A.I.D. programs. The objective of the nutrition policy is to maximize the nutritional impact of A.I.D.'s economic assistance. The policy recommendations are as follows:

- A.I.D. places highest priority on alleviating undernutrition—inadequate food consumption and biological utilization of nutrients.
- A.I.D.'s policy is to improve nutrition through sectoral programs in agriculture, health, food aid, population, and education as well as through direct-nutrition programs.
- This policy will be implemented through incorporating nutrition and food consumption as factors in decision making in sectoral strategies, programs and projects.

This can be effected through:

- A. identifying projects based upon analysis of nutrition and food consumption problems; this is especially appropriate in formulating country development strategies.
- B. including nutrition as a factor in project design:

1. in agriculture, through maximizing consumption effects of crop and technology selection, research and extension, and appropriate national policies.
2. in health, through primary health care which emphasizes growth monitoring of children, providing pre- and post-natal nutrition, supporting environmental health measures, and promoting proper infant feeding practices.
3. in food aid, through targeting appropriate rations to at-risk groups complemented by growth monitoring, health care, and nutrition education.
4. in population by complementing voluntary family planning services with nutrition programs whenever feasible.
5. in education, through promotion of basic education for women, nutrition education in the schools, training community outreach workers in nutrition, and advanced training for professionals and policy makers in LDCs in nutrition.

- C. targeting sectoral projects to individuals or households at-risk of developing nutrition problems;
- D. monitoring and evaluating nutrition impacts of projects that are likely to affect nutrition, food consumption, or food production.
- E. complementing sectoral programs with nutrition projects to enhance nutrition impacts;
- F. utilizing the private sector, especially the food industry, in food programs whenever feasible;
- G. encouraging appropriate national agriculture, health, and nutrition policies to address nutrition and food consumption problems;
- H. coordinating with LDC governments and other donors to achieve nutrition goals.

In seeking opportunities to integrate nutrition concerns throughout A.I.D.'s development assistance program, A.I.D. will focus on the factors that affect food consumption, nutritional needs, and health of nutritionally at-risk groups.

## Preface

Since 1965, A.I.D. has been a leader in international efforts to improve nutritional status in LDCs. For instance, through A.I.D.'s pioneering work in nutrition planning and surveillance,<sup>1</sup> the multisectoral nature of the nutrition problem in LDCs has become increasingly clear. A.I.D.'s nutrition strategy of 1973<sup>2</sup> demonstrated keen foresight in emphasizing protein-calorie malnutrition<sup>3</sup> rather than the then-popular "protein-gap." A.I.D.'s nutrition strategy of 1977<sup>4</sup> introduced integrated preventive approaches to nutrition by focusing attention on household purchasing power for food. This approach was innovative not only in calling attention to the fact that all members of a household may be at nutritional risk (not just the women and children), but also in noting that nutrition problems involve more than aggregate food supply. A.I.D. has also been a major proponent of nutrition planning in developing countries and has been a leader in increasing the nutrition planning capacity of developing country policy advisors, through workshops and training sessions at U.S. institutions.

In the last decade, significant strides in nutritional science have caused A.I.D. to reexamine its nutrition policies and strategies. Major scientific and methodological findings have implications for nutrition programs.

— Measurement of children's growth in less developed countries (LDCs) has shown that until they reach 5 years of age, children in nearly all populations (excluding pygmies) have the potential to grow as tall as U.S. children. This means that children in LDCs are short not because of genetics but rather because of poor nutrition.

— A number of studies have shown that adequate dietary energy (calories) plays a central role in producing healthy, adequate birth weight babies. Supplementing marginally nourished pregnant women's energy intake improves pregnancy outcome significantly.

— Nutritionists and psychologists have shown that poor nutrition impairs cognitive and neurological development which in turn reduce learning capacity, attention span, and school performance.

— Studies on the effect of energy intake and iron status on energy expenditure have proved that undernutrition and anemia reduce work productivity. Improvement of nutritional status is matched by increased worker output.

— Investigators from many institutions have shown that most staple grains provide sufficient amounts of protein for human needs. Only for preschool-aged children fed entirely on staple grain and in some populations for which roots and tubers comprise nearly all of the dietary calories, protein content of the diet may be insufficient.

— Medical studies have shown that poor nutritional status impairs the body's immune system resulting in more frequent and longer bouts of illness and higher susceptibility to life threatening disease.

— Clinical nutrition studies have revealed previously unknown but essential components of the diet; for instance fiber, trace minerals and a balance of cholesterol and different fats have been found to be essential.

— The absence of a truly equivalent manufactured substitute for breastmilk has highlighted the unique role of breastfeeding in infant nutrition, even in the United States. In developing countries breastfeeding is essential to infants in low income households because breastmilk substitutes are often unhygienic because they are improperly prepared using unclean utensils and unsafe water.

A.I.D.'s policies in food and agriculture, health, population and food assistance have also changed, necessitating restatement of A.I.D.'s major policy objectives in nutrition to provide overall guidance for improving programming to meet these objectives.

<sup>1</sup>Nutrition surveillance involves collection and analysis of data on food consumption and nutritional status on a regular basis. The current work being carried on at Cornell University through the Office of Nutrition is a good example of pioneering efforts in tracking nutrition surveillance efforts and promoting the functional classification of malnutrition.

<sup>2</sup>The A.I.D. Nutrition Program Strategy, U.S. Agency for International Development, June 1973.

<sup>3</sup>Lack of protein and calories is sometimes called protein calorie malnutrition (PCM).

<sup>4</sup>"A.I.D.'s Responsibilities in Nutrition," AIDTO Circular A-98, April 1977.

## I. Introduction

Sound nutrition policies are essential to the overall development efforts of LDCs. One of the messages that the U.S. carried to the Cancun Summit (in October 1981) was that "increasing food production in developing countries is critically important—for some, literally a matter of life or death. It is also an indispensable basis for overall development." Despite enormous strides in agricultural technology in the last decade, however, people are still dying from starvation and extreme malnutrition.<sup>5</sup> Hundreds of millions are not getting enough to eat—thus rendering them vulnerable to disease and disability, and unable to work or learn to their full potential. If, as the U.S. emphasized at the UN General Assembly in September, 1981, "the individual is the beginning, the key element, and the ultimate beneficiary of the development process," then one of the first goals of development efforts must be to overcome the obstacles that stand in the way of individual initiative and potential. This paper examines a variety of policy initiatives that the U.S., other donors, and LDCs themselves can adopt to maximize the impact of development programs on nutritional status of citizens of the developing world.

U.S. foreign aid is based on a commitment to broad based economic growth in developing countries through "alleviation of the worst physical manifestations of poverty among the world's poor majority" including "starvation, hunger, and malnutrition" (Foreign Assistance Act of 1961, Chapter 1, Sections 101 and 103). Improving nutrition is vital to the overall goal of strengthening the economies of developing countries.

Nutritional well-being is a necessary and crucial *input* in the development process. Undernutrition—insufficient consumption, absorption, and biological utilization of food—can result in starvation and death in extreme circumstances, but is usually disguised as low stature and weight, low worker productivity, poor school performance, poor reproductive performance, or lethargy.

*Undernourished adults* have lower stamina, productivity, and attentiveness. They are sick more often and more seriously than well-nourished adults. *Undernourished women* give birth to smaller, less robust babies than well-nourished women. Low birthweight babies are at high risk of death before the age of one year. *Undernourished*

<sup>5</sup>Throughout this paper "malnutrition" is used to describe a spectrum of nutrition problems including underconsumption, overconsumption, and nutrient imbalances. "Undernutrition" is specifically inadequate consumption and biological utilization of food.

*infants* have low disease resistance which may cause them to die from what would be minor diseases under better circumstances (measles case mortality in Guatemala in 1976, for instance, was 268 times that in the U.S.). Diarrhea and intestinal parasites (the most prevalent cause of illness in LDCs) are exacerbated by and in turn aggravate poor nutritional status of the child since the ability to absorb and effectively utilize nutrients is sharply reduced under these conditions.

*Undernourished children* have stunted mental and physical development that may later compromise school performance, physical capacity, and economic productivity. *Undernourished households* are less productive because of disease, human energy shortage, time losses to sickness and inefficiency, and loss of human life (high pregnancy losses and maternal mortality, high infant and child mortality, low life expectancy). *Undernourished individuals, communities, and societies* fall far short of their creative, physical and economical potentials because of losses to poor nutrition: health and education expenditures are wasted because many of the recipients of these services never reach productive age; human spirits are constrained by enervation; opportunities for national development are foregone because of undeveloped human capital; and internal security is fragile as a result of frustration or dissatisfaction with the inadequacy of one of the basic necessities of life: food.

Better nutrition is also an essential *output* of economic development. Unless health, life expectancy, and vitality are improved as a result of economic growth, development has not achieved its true objectives. In the long run, A.I.D.'s assistance to developing countries should be reflected in improved nutritional status. This will not come about automatically, however. It will require a conscious effort to include nutrition as a basis for resource allocation in strategies, programs and projects.

Approximately 600 million people in developing countries do not have access to enough food to meet their nutritional needs. Only a small portion of those people are clinically malnourished. The preponderance of them are mildly to moderately undernourished. Others are poorly nourished on a seasonal basis. Still more are at the margins of adequacy such that major illness, increases in food prices, or decreases in real income could force them into nutritional deficit. Although the largest number of calorie-deficient people are found in Asia, it is in Africa where the largest proportion of the total population consumes insufficient energy (see table).

Number of people (millions) and share of population with calorie intakes below 90% FAO/WHO requirements in selected countries by region, 1973

	Millions of People with Calorie Deficient Diets	As a Percent of Regional Population %	As A Percent of Total Calorie Deficient %
LAC	92	37%	15%
Asia	448	49%	75%
NE	34	33%	6%
Africa	25	53%	4%
	599	46%	

SOURCE: Reutlinger and Alderman, *The Prevalence of Calorie-Deficient Diets in Developing Countries*, World Development 8: 406, 1980.

## II. Objective of the nutrition policy and its accomplishment

The objective of this policy is to maximize impact of A.I.D. development programs on nutritional well being of poor people in LDCs. This objective will be accomplished in development sectors through including nutrition and food consumption as factors in decision-making and cost-benefit analysis concerning strategies, programs, and projects. It can be accomplished through any or all of the following mechanisms.

- 1) identifying projects based on analysis of the nutrition problem;
- 2) designing projects to overcome constraints to meeting nutritional needs;
- 3) targeting projects to nutritionally at-risk groups;
- 4) monitoring and evaluating impacts of projects on nutrition and food consumption;
- 5) providing technically strong nutrition programs to (a) backstop activities in all development sectors, (b) supplement sectoral efforts to ensure effectiveness in meeting nutrition goals and (c) complement sectoral programs with specific nutrition project activities to enhance nutrition impact;
- 6) increasing the indigenous capacity in LDCs to analyse and overcome nutrition problems through promotion of multisectoral nutrition planning and appropriate national policies.

## III. Elements of the Nutrition Policy

The nutrition policy of the Agency for International Development is to improve nutrition and food consumption through sectoral programs in agriculture and health and through direct nutrition programs when they are suited to achieving Agency objectives.

Nutrition policy concerns the factors that affect human food consumption and nutritional requirements, focusing on the needs and resources of the household, including health considerations,

economic demand, and food use. Reciprocally, agriculture policy pertains to the factors that influence the production of food and other crops and agricultural employment generation. Food policy, which technically links consumption-oriented nutrition concerns with production-oriented agriculture perspectives, tends to focus on prices, imports and exports, aggregate demand, and national food security, with relatively little attention to questions of nutritional needs or food distribution at the household level. A.I.D.'s Food and Agriculture Development Assistance Paper<sup>6</sup> details the ways in which agriculture production, food supply, and family incomes can be increased. The successful implementation of the Food and Agriculture Policy will not solve all nutritional problems, nor should it. Agricultural projects can positively affect nutrition through the mechanisms detailed elsewhere in this paper. Those nutritional problems which are not most effectively or appropriately dealt with through agricultural development must be solved through health or other sectors or through direct nutrition programs. This policy paper articulates the Agency's nutrition policies and discusses the ways in which activities in agriculture, health, and other development sectors can positively affect nutrition in developing countries.

**A.I.D.'s policy emphasizes coordination among sectors and between the field and Washington to maximize achievement of nutrition goals.**

Because most project officers are not nutritionists, it is essential that missions make best use of outside technical experts and improve their inherent field capacity through training and enhancing field staff with nutritional expertise.

Integration of nutrition concerns throughout A.I.D.'s program is best institutionalized in the context of project, program and CDSS reviews and by providing technical input to sectoral strategies. More particularly, if a project is likely to affect the food system, health, or household labor and time, then the potential for nutritional impacts should be given careful consideration. Special attention will be given to such projects in missions which identify food production and malnutrition as major problems in the host country.

### A. Problem Identification

A.I.D.'s nutrition policy places highest priority on alleviating undernutrition—that is, inadequate consumption of food.

*Undernutrition can be traced to insufficient food supply, inadequate access to food, insufficient*

<sup>6</sup> A.I.D. Food and Agricultural Development Assistance, March, 1982.

*purchasing power, inappropriate demand patterns (due to taste, tradition, perceptions), inequitable distribution of food within countries, inequitable allocation to individuals within families, and/or poor utilization of food.*

Part of the problem is inadequate food supply—of the 36 lowest income countries in the world (those with GNP less than U.S. \$370 per capita per annum) in 1977, eleven had a food supply that provided less than 90% of the estimated aggregate human energy requirements; nineteen other countries had between 90% and 100% of food energy needs available.<sup>7</sup> In sub-Saharan Africa, average per capita food supplies have actually been decreasing over the last decade, although elsewhere in the world per capita food supply has increased slightly. Therefore programs in agriculture and population are essential to solving the nutrition problem in the long term.

The imbalance between growth in food supply and population increase may explain undernutrition on a macro or national level, but many countries with apparently adequate aggregate food supplies have high incidence of undernutrition. Some countries which are net food exporters still have serious nutrition problems.

On the regional, household, and individual level, the nutrition problem relates to many factors in addition to food supply. *Physical access*—markets, roads, transportation, production for auto-consumption—often limits the availability of food within and between regions of a country. Furthermore, *economic access and purchasing power* are usually limiting factors for the rural and urban poor. High consumer prices, low income, low producer prices, and unreliable employment may limit economic access to food. In many cases *food availability has a seasonal component as well*—preharvest hunger is common in subsistence economies. For this reason, improved productivity, on-farm grain storage, food preservation, local food security and seasonal employment can affect nutritional status.

*Intrahousehold distribution of food is another determinant of nutritional status. Frequently women and young children receive less or lower quality food while the men and economically ac-*

<sup>7</sup>If all people consumed as much energy as they needed (and no more than they needed), then a food supply equal to 100% of caloric requirements would be needed nationally. When some people consume more than they need and others consume less, however, estimates of required food supply must be inflated to compensate for skewed overconsumption. In developing countries it is estimated that 110% of dietary energy requirements is needed in the food supply to compensate for that nutrient wastage by overconsumers. In cases where distribution is very skewed, even 110% of energy requirements may be too low.

tive children are given significantly more and better food. In many cases this is due to economic pragmatism: if the wage earners are hungry, they cannot work as hard, they will not earn as much money and the family will be worse off.<sup>8</sup> This problem can be addressed through culturally appropriate nutrition education and through direct nutrition programs (e.g., home gardens).

In that women's income seems to be spent preferentially on food, A.I.D. might also take advantage of such existing household allocation behaviors to address nutrition problems by specifically including women in income producing projects. The ways in which household resources are allocated, who makes the decisions, and how these processes change over time are just now being studied<sup>9</sup> so that guidance in using such processes to improve nutrition will be generated from the field.

Undernutrition is also related to high food needs or excessive nutritional losses. Human food needs are above average in developing countries because of higher energy expenditures in work, and high proportions of growing children and pregnant and lactating women. Excessive losses are due to infectious disease, intestinal parasites, and diarrhea.

Addressing protein inadequacy and micronutrient deficiencies is also important.

Dietary protein, Vitamin A, iron, iodine, and some B Vitamins are lacking in some areas of the world and for certain population groups. Technological solutions to these problems are available, although actual delivery of the technology has proven administratively difficult in some cases. Deficiencies may be inherent in the local diet or may result from agricultural or economic changes. In some parts of the world, the

<sup>8</sup>Recent reviews of the literature have shown that inequitable distribution of food within the household is ubiquitous. But uneven intra-household food allocation is not the only problem. Other research has shown that even if many low income families did distribute food according to relative requirements of each household member, no one would get enough to eat.

<sup>9</sup>Evidence is just beginning to emerge on this point. Some studies have indicated that children of working women are less likely to be malnourished than children of non-working women. In Kerala, for instance, it was found that women's income was twice as important in determining children's nutrition status as men's income. In the Philippines women's labor force participation was positively associated with caloric adequacy among children in the lowest income group although consumption of Vitamin A was reduced. Women's working is not always best for children, however most poor women in LDCs do participate in some form of work outside the home. The positive association of women's income and nutritional status of their children is mediated by various aspects of the compatibility of women's productive and nurturing roles (e.g., the availability of childcare, homemaking services, and labor saving devices).

staple diet is often too bulky to satisfy the nutritional needs of small children simply because their small stomachs will not hold enough food. For these individuals increasing the nutrients per gram of food—"nutrient density"—is of high priority.

A "modern" diet can rapidly replace a traditional one, sometimes with deleterious short-term nutritional consequences. With increasing income, for instance, some poor families buy higher status less nutritious foods: polished rice instead of brown rice, sweets and snacks instead of staple grains.

#### B. Designing programs to address nutrition problems

A.I.D.'s policy is to include nutrition as a factor in program and project design.

##### 1. Agriculture and rural development

Agricultural and multisectoral rural development programs comprise the bulk of A.I.D.'s development assistance budget both because agriculture is a major source of national income and because most people in LDCs live in rural areas. Through agricultural and rural development projects, A.I.D. is simultaneously helping to improve the food supply, economic base, and employment in those countries. In order to assure that agricultural goals are achieved and that the benefits of development reach the poor, however, the nutritional needs of the rural population and the nutritional impacts of development programs must be taken into account.

To address nutrition concerns within A.I.D.'s agricultural program, it is necessary to know *how the food produced reaches the ultimate consumer and how the income generated is ultimately spent on food* and other commodities. Increased food production or higher income does not automatically mean better nutritional status especially in the short term. Problems of food distribution and storage, income distribution, intra-household control over resources, and alternative (non-food) claims on financial resources all affect the production/nutrition equation.

Rural households which are nutritionally at-risk are often those with few productive resources—land, water, labor, or capital. They produce only an occasional marketable surplus and pursue limited economic activities. They may also be least able or willing to take risks, either because they are physically inaccessible or because they have the lowest margin for absorbing setbacks. Hence, their market returns may be low, and the technology they use different from that designed for and relevant to commercially-oriented farmers. To improve the productive capacity and hence the nutritional well-being of farmers who

are not currently market oriented will require a strong emphasis on development of appropriate institutions as well as agricultural research and technology that is responsive to their needs and risk situation. Improving the productive capacity of more resource-rich and commercially-oriented farmers is also important for nutrition since these farmers are likely to be the primary producers of urban food supplies.<sup>10</sup>

Incorporation of nutrition concerns into agriculture programs necessitates a balanced allocation of resources among short-term production-oriented investment, investments in long-term human resource development, and medium-term investments designed to ensure access to factors of production and markets, particularly for those rural and agricultural households which are nutritionally at-risk. There are trade offs and complementarities between meeting production/employment goals and meeting nutritional goals which should be taken into account by the mission staff when making program decisions.

**Agricultural projects should anticipate changes in food consumption which accompany changes in cropping patterns.**

When the cropping pattern, labor or resource allocation, seasonality of harvests or income is changed by an agricultural project, alterations are usually made within the household to accommodate them. Many of these changes are benign—but where food habits are changed there is a potential for negative nutritional impact. At the very least, projects affecting these factors should monitor nutritional status or food consumption of the target population.

Additional labor requirements for a new or improved crop may cause a farmer to plant less labor intensive and less nutritious household food crops (for example, cassava is planted instead of yams because the former requires less labor and is less sensitive to timing of cultivation and harvesting).<sup>11</sup> By providing off-season employment or interharvest crops such labor/food supply conflicts could be avoided or minimized.

When cash crops are harvested once per year, householders may be cash short in the non-harvest season and unless they have planted a food crop; they may not be able to buy sufficient food for

<sup>10</sup> Innovations which keep costs of production down, no matter what the size of farm, will help to assure that the food supply is available at a reasonable cost, and will enhance overall purchasing power.

<sup>11</sup> This phenomenon happened in West Africa where the introduction of cocoa induced a change from yams to cassava because the women has less time to spend harvesting their subsistence crops.

their needs. Moreover, when a large number of farmers in a region convert acreage from food crops to cash crops, local food supplies may be limited and increase in price unless local transportation and marketing mechanisms are improved. Lower income farmers are particularly vulnerable to seasonal variations in food supply and income because a larger proportion of their income is spent on food and because they are most likely to have smaller food reserves. Therefore, attention should be paid to the institutions on which the household food systems depend.

The new cash crop farmer may not be able to purchase the foods in his traditional diet in the quantities which used to be consumed from subsistence production. In order to fill stomachs, therefore, he may have to purchase less expensive and less nutritious foods. Also, when cash income replaces food income, there is a higher likelihood that non-food items will claim a portion of the household budget.<sup>12</sup> In commercial agricultural production projects, positive nutrition impacts can be enhanced through complementary nutrition components like nutrition education and home gardens.

Recently, attention has been directed at farming systems, particularly to the physical and temporal constraints to increasing productivity by smallholders. Because farming systems programs are inherently multi-sectoral in focus, they offer a good vehicle for adding nutrition activities where needed and appropriate.

#### **Agricultural projects should anticipate nutritional impacts of labor requirements.**

Human energy and time are frequently the scarcest resources in farm families, especially in subsistence and female-headed households. Even on commercial farms, labor is frequently scarce for peak cultivation and harvest activities. Some agricultural improvements are more labor intensive than traditional methods. For instance, new rice varieties require more time and energy to cultivate than traditional varieties. Where unemployment is high, such innovations can

<sup>12</sup> The impact of cash cropping on nutrition is a complex issue. Although increased income is the "long term" solution to the nutrition problem for most at-risk households, the improvement in nutrition is not automatic in the short term. Studies have shown that some income generating agricultural activities fail to improve nutrition. Frequently the benefits of additional income are undermined by time constraints of the mother, insufficient complementary health services, inadequate education of the mother resulting in poor food purchasing habits, contaminated water supplies, and seasonal or erratic receipts of income which cause money management problems in the household. Nevertheless, families frequently find it difficult to return to food crops once they have cultivated cash crops.

have positive effects on income and food consumption. On farms which cannot hire labor, energy- and time-saving technology in the form of low cost innovations which are also capital-saving (e.g., hand pumps, small-scale grain mills) can be vital elements of a strategy to improve nutritional status.<sup>13</sup>

Current A.I.D. policy emphasizes the importance of employment generation as a component of agricultural and rural development. For maximum nutrition impact, employment opportunities should be directed to high nutritional risk groups and spread evenly throughout the year, to assure steady income to meet food needs and discourage labor migration, or properly timed with seasonal food shortages (usually in the preharvest period) to raise income at a time that food deficits must be made up through purchases. At a minimum, wages should be commensurate with energy costs of the work. In one Latin American country it was found that the introduction of sisal into local agriculture pushed farmers into caloric deficit because their energy expenditures in sisal processing exceeded the amount of food energy they could buy with their wages. The new technology, in short, introduced an extra nutrition cost.<sup>14</sup>

#### **On- and Off-farm employment can strengthen intrahousehold resource allocation patterns which improve nutrition.**

When women's employment is encouraged, efforts should be taken to facilitate good child care and nutritional practices, including the encouragement of proper infant feeding practices. Frequently when rural women are employed outside the home, infants are cared for by siblings (often not much older than themselves) or elderly family members. The quality of care and food provided to the child may be inadequate under such conditions and the caretaker, often a young girl, may be missing out on educational opportunities because her services are needed at home. By providing work close to home, allowing infants to be brought to work, provision of child care facilities or services, and training caretakers in proper child care practices, potential negative effects could be minimized.

Evidence has been accumulating to indicate that *who* earns the income is almost as important as *how much* is earned. The adult male usually

<sup>13</sup> Poorer households must use a larger proportion of their labor supply, (i.e., number of work days per family is higher than wealthier households) to satisfy their food needs. Women and children in particular have been shown to have significantly higher work loads in poor families.

<sup>14</sup> Gross, D. R., and B. A. Underwood. Technological Change and Caloric Costs: Sisal Agriculture in Northeastern Brazil. *Am. Anthro.* 73:725-740, 1971.

decides how his income will be spent and gives a portion to the female head-of-household for household necessities (mostly food) but the proportion of his income spent on food is usually lower than that of women's income. In addressing nutrition problems through employment generation, project designers should understand and take into account the ways in which different household members use their income. (See footnote 9).

**Agricultural research should address food consumption patterns of at-risk groups and recognize their technological and capital constraints.**

Increasing the nutritional content of crops through genetic manipulation is but a small part of the potential nutritional impact of agricultural research. Far greater nutritional improvements are likely to result from research improving productivity, reliability, and food processing characteristics of basic food crops which are grown and/or consumed by nutritionally at-risk groups and by incorporating certain technological and resource assumptions into plant breeding. Research on basic food crops like cassava and millet can have major implications for nutrition. Recent research on cassava, for instance, has focused on breeding a plant which can survive with very few leaves. Because cassava leaves are a major source of nutrients in the preharvest period in some cultures, the introduction of this new plant will enable farmers to eat both the leaves and the roots. Crops which require large amounts of fertilizer and water, those for which there are economies of scale, and those that require mechanization for cultivation, harvesting, or processing will not be well-suited to those farmers who cannot get credit and who have few available capital resources. Those are the same farmers who are probably poorly nourished and have the greatest nutritional need.

## 2. Health

**Promotion of good health is essential to meeting the nutritional objectives of the Agency.**

The interaction between nutrition and infection is well-known.<sup>15</sup> A poorly nourished individual has an impaired immune system which means not only that he is more susceptible to disease, but also that treatment may not be as effective. In addition, certain infections raise nutritional requirements, reduce nutrient absorption, or decrease appetite—all of which lower nutritional

status. For these reasons, nutritional well-being is both a precursor and a product of good health.

**Nutrition objectives should be addressed in the health sector through primary health care.**

One of the main emphases of A.I.D. health policy is primary health care delivery and the nutritional aspects of good health are stressed. Preventive health care—immunization programs, environmental sanitation, parasite control, health and nutrition education, growth monitoring, prenatal care, and well-baby clinics, etc.—is the focus of A.I.D.'s health policy and an important element in its nutrition policy as well. It is extremely important, for example, to reach pregnant women and preschool children in order to avoid the permanent damage which can result from malnutrition in early life. Health care is necessary, although not sufficient, for good nutrition. Improving prenatal maternal nutrition can be an effective way of reducing infant mortality through increasing birthweights of infants and increasing maternal nutrient stores.

**Growth monitoring is a low cost preventive health care measure with major nutritional significance.**

Growth monitoring involves the periodic weighing of preschool children and using that information to target health care, health or nutrition education, family planning, or supplementary feeding programs to mothers of children whose growth is faltering.

Growth monitoring of preschool children carried out by community workers is an ideal way to break the downward spiral in health caused by repeated incidents of infection and malnutrition. It has been found that mothers usually do not know that their children are not growing properly until they exhibit the physical manifestations of clinical malnutrition.<sup>16</sup> Growth monitoring alerts the mother early that her child's health is deteriorating and enables the family to treat the problem while the solution is still within its means. In many countries, growth monitoring has proved to be effective and inexpensive. Because it depends on and tends to generate sustained community effort, growth monitoring can be a vehicle for institution-building and increasing utilization of primary health care and other basic services in the community. Proper timing of inoculations, preventive health care, proper weaning practices, home-based treatment of diarrhea (oral rehydration therapy), and family planning can all be encouraged through growth monitoring.

<sup>15</sup> Chandra, R. K. Immunodeficiency in undernutrition and overnutrition. *Nutrition Rev.* 39:225, 1981. Scrimshaw, N. S. et. al. *Interactions of Nutrition and Infection*. Geneva: WHO, 1968. (Monograph Series No. 57).

<sup>16</sup> Griffiths, M. *Growth Monitoring*. Washington: Am. Pub. Hth. Assoc., 1981.

**It is the policy of A.I.D. to support breastfeeding and proper infant feeding practices.**

Traditionally infants were breastfed for two or more years but now "modern" women bottlefeed their infants, often without knowing enough about the nutritional needs of infants. Babies fed barley water, cornstarch gruels, and diluted infant formulas, often prepared with unsafe water and contaminated utensils, may die before their mothers find out how to feed them properly. The more serious problem in rural areas is late introduction of complementary foods to breastfed infants. Proper complementary feeding of the weaning child is often a problem of dietary practices, home food preparation and preservation constraints, and other demands on women's time. A more multifaceted approach, going beyond breastfeeding promotion and food availability is therefore often required. Nutrition education, including encouragement of breastfeeding, improved child feeding practices, food fortification, and strong national nutrition policies, can avert these negative nutritional impacts.

**Environmental health measures are another means of averting nutrition problems.**

Other nutrition enhancing health activities are inoculations for common diseases (BCG, measles) and health education aimed at changing behavior or conditions that expose children to parasites and intestinal disease. Malaria, schistosomiasis, tuberculosis, and cholera are endemic public health problems which heavily affect nutritional status in many parts of the world. Controlling these diseases will also reinforce the nutritional impacts of improved food supply and consumption.

**Provision of community water supply and installation of latrines should be encouraged as a part of the general development strategy in health project areas.**

Parasites and gastrointestinal disease could be substantially reduced through improved hygiene. The preschool child's feces can be a major source of infections in the household unless the mother takes adequate precautions. Where water is not readily available, however, hygiene education may be less important than water supply. Therefore provision of an adequate water supply can be part of incorporating nutrition into health projects.<sup>17</sup>

<sup>17</sup> Intestinal parasites may consume up to 25% of dietary intake. Therefore eliminating parasites and infectious disease is a necessary element in solving nutrition problems. Unsanitary and inaccessible water supply has been shown to affect nutrition adversely in several countries. See A.I.D./PPC. Domestic Water and Sanitation Policy Paper, 1982.

### 3. Food Assistance

The Agricultural Trade Development and Assistance Act of 1954 (PL 480) provides for concessional sales of U.S agricultural commodities to LDC governments (Titles I and III) and provides food donations for famine relief, combating malnutrition, and promoting economic and community development (Title II).

As a major resource transfer (Titles I and III), PL 480 can be used to support and encourage good development policies. (This is discussed in detail in the Food and Development Discussion Paper.<sup>18</sup>) In the area of nutrition, such policy reforms could include a functional national nutrition policy, nutrition monitoring systems, and manageable, well-targeted subsidized consumption system for the lowest income groups, or nutrition-responsive agricultural policies. The foods themselves can have nutritional impact if carefully programmed and targeted. If food aid had a disincentive effect on local agriculture it could adversely affect nutrition, so attention must be paid to this aspect of food aid. Furthermore, the food commodities can change tastes and cause shifts in demand for local and imported foodstuffs.

Nutrition improvement has been one of the major objectives of Title II in the past. To achieve this objective, significant changes in A.I.D.'s programs are called for, including better targeting, specifically to reach malnourished preschool children and pregnant and lactating women, appropriate ration sizes, and inclusion of nutrition education along with the supplemental food.

Title II, as emergency relief, has obvious nutritional and humanitarian importance, and it can also be used to overcome short-term household food supply shortages.

In some settings, Title II may be useful for household feeding or as a resource for health, education, family planning, and income generating activities. Title II is also one of the few means available to A.I.D. for overcoming urban malnutrition, a growing problem throughout the developing world. The Bureau of Food for Peace and Voluntary Assistance is currently reviewing the objectives and guidelines for more effective programs of Title II and will shortly be issuing guidance to the field on this issue.

<sup>18</sup> A.I.D./PPC, Food Aid and Development: A Policy Discussion Paper, Washington, D.C.: August 1981. Other papers and reports are being or will be prepared by the A.I.D. Bureaus for Program and Policy Coordination and Food for Peace and Voluntary Assistance.

#### 4. Population

Nutrition both affects and is affected by fertility levels.

High rates of population growth tend to limit per capita development gains and overload the physical and economic infrastructure of LDCs. The direct impact of high birth rates, however, is most visible at the household level—in high ratios of non-productive to productive household members, and in the biological, physical, and temporal stresses on women caused by frequent childbearing. Infant mortality (often due to poor prenatal nutrition of the mother and postnatal nutrition of the infant) is considerably higher when birth intervals are short.

Programs which join provision of voluntary family planning with efforts to combat under-nutrition can be cost-effective and culturally acceptable. In one Asian country, for instance, a growth monitoring and primary health care program has been added to the national voluntary family planning program, in large part because it is clear that further reductions in fertility may come only when parents believe that each child born will survive to adulthood.

**Nutrition and family planning programs should be linked wherever possible.**

Growth monitoring can be an important tool in linking nutrition and family planning programs, because the faltering growth rate of the infant indicates the need for introduction of weaning foods and the return of fertility in post-partum women. Breastfeeding reduces fertility the most when the infant is fully breastfed. Providing voluntary family planning services at a health clinic or food distribution program site will save time for the mother who seeks these services and encourage her to associate good health, nutritious food, and the conscious choice about family size. Coincidence of services can also be cost-effective by economizing on building, training and management costs, but care must be taken not to overload community workers who deliver these services.

#### 5. Education and Training

**Promotion of basic education will contribute to improved nutrition.**

Although education is not considered to be a nutrition intervention per se, good nutritional status in children is frequently associated with literacy and educational attainment of the parents, particularly of the mother. In the long run, extension of basic education, particularly to females, will have positive impacts on nutrition in the household.

**Nutrition education in schools can promote better food consumption in the family.**

In the short term, schools can be an important avenue for improving nutrition, not only through nutrition education (e.g., home economics) but also through allied school activities (e.g., school gardens). Particular emphasis should be given to the nutritional value of local foods, purchasing foods to maximize nutritional value, storing, processing and preparing food to maintain nutritional value and hygiene education. At a minimum, schools must have basic sanitary facilities and water, since most of the content of nutrition and hygiene education involves food handling and personal and community sanitary practices. Efforts should be made to extend nutrition education to the rest of the family through nonformal education, mass media, and community demonstrations.

**Training programs for community outreach workers should include basic nutrition.**

In some countries, government and community outreach workers make periodic visits to the households of nutritionally at-risk groups. In setting up training programs for agricultural extension workers, social workers, medical personnel, and community volunteers, attention should be directed to how malnutrition affects the households they visit and how their activities can influence nutrition. Nutritional "first aid" and referral (e.g., in the case of oral rehydration) could also be taught. Although nutrition would be a small component of their training, its inclusion would greatly increase public consciousness of nutrition problems and improve informal nutrition monitoring of the community.

**Advanced training in nutrition is needed in many LDCs.**

Higher level training in nutrition is also needed. Development planners, economists, agriculturalists, educators, physicians and nurses, must be cognizant of the community's nutrition problems and of the possible nutritional implications of their work. There is a serious lack of nutrition planners in LDCs. If A.I.D.'s efforts in nutrition are to become self-sustaining, the countries must have a local capacity to assume responsibility for problem analysis and program implementation.

#### C. Targeting based on nutrition

**A.I.D. policy is to target sectoral projects whenever feasible to households and individuals at-risk of developing nutritional problems.**

Nutritional risk is the probability that someone will develop a nutritional problem. Women of

childbearing age, infants, and preschool children have traditionally been called "vulnerable groups" because they are at high nutritional risk due to their increased physical needs. In addition, certain *households* are more likely to have malnourished members than others, and these can be identified through a system of "functional classification," for instance by income groups, landholding, crop production system, or household composition. High nutritional risk has been associated with geographic isolation, small landholding, occupation (fishermen, landless workers), low or scheduled caste, household composition (polygynous and female-headed households), low income, and low socio-economic status (illiteracy, unemployment). The classification itself varies from country to country.

The method used for targeting development programs depends in large part on the type of project proposed. Primary health care programs, for instance, deal with individuals or groups of individuals; hence it makes sense to give particular attention to those individuals at highest nutritional risk. Agricultural programs on the other hand, tend to focus directly or indirectly on households, communities, or regions, and therefore can use functional classification of these units as the basis for targeting.

To determine nutritional risk, it is necessary to link nutrition status or consumption data to individual or household characteristics. Frequently such data do not exist in a usable form for such analysis. Low cost small-scale surveys and complementary computer software can be used to determine nutritional risk rapidly and inexpensively for small areas. Pre-existing national data can frequently be manipulated to yield useful information for targeting also.<sup>19</sup> Consumer price indexes, for example, are frequently based on household consumption and expenditure surveys.

An example of the uses of functional classification is the Integrated Agricultural Development Project in Palawan, Philippines. Secondary data supplemented by a small in-depth nutrition study in the project area identified highland slash-and-burn farmers and fishermen as high-nutritional-risk groups. Subsequently, the project gave particular attention to those groups and emphasized food production for the upland farmers. Decisions about provision of roads and water were based partly on consideration of these at-risk groups, and specific nutrition components were

added onto the general agricultural and rural development efforts to enhance their nutritional impact.

#### D. Evaluating Nutrition Impacts

It is the policy of the Agency to monitor and evaluate nutrition impacts of projects that are likely to affect health, food production or food consumption.

Most agricultural and health project officers are sensitive to nutritional considerations and identify alleviation of malnutrition as a legitimate project goal. Nutritional impacts are not always measured however.

Nutrition effects can be anticipated by systematically reviewing the ways in which a project might affect nutritional status and by instituting monitoring systems for those variables most likely to be directly affected. Some obvious factors affecting nutritional status include:

- food and nutrient availability at the individual, household, and community level, especially in the preharvest period;
- response of food purchases to price and income changes;
- allocation of food among family members;
- household nutritional needs;
- food preparation, processing, procurement and storage;
- food security at the household level;
- resources necessary for food utilization (fuelwood, water, time, human energy);
- cultural food practices and beliefs;
- environmental health and parasitism;
- purchasing power of high-risk households and cost of an adequate diet.

A cost effective way to measure nutritional impact is to carry out small cross-sectional surveys of food consumption of groups or nutrition status (usually height and weight of children) of individuals or households.

Nutrition status surveys of a statistical sample of children can indicate changes in nutrition over the life of project. Measures of food consumption of groups, if carefully done by experienced scientists, will also measure impacts of projects on target households. In one African country, monthly information on food production, land, labor use, and income of smallholders has been linked to intermittent surveys of nutritional status of preschool children to monitor nutritional trends. In an Asian country the community infant weighing program has enabled monitoring of project impacts in some areas. A.I.D. is currently supporting efforts in twelve countries

<sup>19</sup> To date functional classification has been used to identify nutrition problems in Costa Rica, El Salvador, Philippines, Zambia, Sri Lanka, Kenya and Haiti.

to set up nutritional monitoring systems which can be used to assess project impacts.

To estimate nutritional impacts of projects, it may not be necessary to measure changes in nutritional status directly or comprehensively, although that is preferable.

Nutritional impact can be roughly estimated using non-nutrition data. For instance, monitoring local prices of major basic foods (e.g., cassava or paddy rice) can provide a relatively sensitive measure of how low-income consumers are likely to be affected by supply changes, in areas where agricultural prices are not fixed. Supplies of foods in local markets and granaries, infant mortality rates (using a base population of at least 10,000), local wages, and incomes of at-risk households can also provide evidence of probable outcomes if the linkages between indicators and causes of undernutrition are well-understood and if the indicators are of reasonable quality.

These techniques need to be supplemented by knowledge of intrahousehold economic activities including production of commodities for home consumption. Understanding the social, cultural and institutional context in which projects are implemented can help a project designer avoid potentially negative impacts and maximize positive effects of development activities. In one area, a livestock management program was designed to encourage cattle owners to sell the animals at two years of age. The project originally ignored the fact that women milked the older cows, thus providing an important nutritional supplement to their children's diet. Modification in the project design made it possible to avoid what would have been an extremely harmful secondary impact of this income generation project.

#### E. Complementing sectoral programs with nutrition projects

Nutrition projects should complement sectoral programs to enhance nutritional impact when they are suited to meeting Agency goals.

Nutritional projects play an essential role in extending and refining A.I.D.'s efforts at alleviating malnutrition. Food fortification, nutrition education including non-formal education through mass media, food technology development, nutrition planning, and promotion of proper infant feeding practices, have formed the backbone of technical nutrition support in the past and should continue both to address nutrition problems directly and to complement more indirect projects. For instance, where agricultural programs are focused on raising

household income, a nutrition education component should assure that the household has information on the nutritional implications of alternative uses of the new income and changes in the traditional diet.

#### F. Utilizing the private sector

In many cases, private sector initiatives can enhance public investments particularly in the areas of agribusiness, food processing, and fortification. The private sector may also hold the key to solving problems of urban malnutrition when they are due to inadequate food marketing and distribution systems. Where possible, private sector efforts should be encouraged. The recent effort by A.I.D. to provide technical assistance to food industries in developing countries through private sector representatives is illustrative of the types of collaboration A.I.D. seeks.

#### G. Improving Policies

A.I.D. supports inclusion of nutrition considerations in national policies.

A.I.D. continues to endorse multisectoral nutrition policies in host countries. National agricultural planners and policy makers should consider the effects of food and agricultural policies on regional and local food supplies, producer price stability, and food consumption, especially by nutritionally at-risk groups.<sup>20</sup> They should also be encouraged to set up nutrition monitoring systems to facilitate such analysis. Health policy should focus on preventive health care and inclusion of nutrition components in primary health care. Education and population policies should take into account the nutrition factor as an input to and product of successful sectoral strategies.

#### H. Coordination

Many bilateral and multilateral donors have programs designed to improve nutrition. A.I.D. actively seeks opportunities for coordination of nutrition activities within countries. Cofinancing different components of nutrition-related programs and complementarity among programs by different donors are strongly supported. A.I.D. encourages host country policies which effectively utilize all available private, public and voluntary organizations to meet overall development goals.

<sup>20</sup> A.I.D., in conjunction with the Nutrition Economics Group at U.S.D.A., has supported and will continue to support research and technical assistance to missions in this area.

### Conclusions

A number of conclusions emerge from this review of A.I.D.'s nutrition policy and objectives. First, nutritional well-being is not only a necessary input in the development process; it is also an essential output. Hence, efforts to alleviate undernutrition are an integral element of A.I.D.'s overall development assistance program.

Second, the greatest lasting improvements in nutrition in LDCs are likely to result from changes which incorporate nutritional considerations in the design of programs in other economic sectors—especially agriculture, rural development and health. Hence, this paper has devoted a great deal of attention to policy issues in the design and implementation of agriculture, health, education, family planning and other development activities. Direct nutrition projects are an important complement to such activities.

Third, the United States has a key role to play in helping developing countries overcome their nutrition problems—through its multisectoral approach to economic development, its commitment to improving food security in the Third World, its strong research and development capacity in the biomedical and operations

research areas, as well as its commitment to experimentation in search of more cost-effective approaches to improvements in basic services in LDCs. Furthermore, the U.S. food industry has much to share with LDCs in promoting a safe, nutritious, and reliable food supply.

Finally, in order to maximize the impact of A.I.D.'s development programs on the nutritional well-being of the citizens of developing countries, A.I.D. will give increasing attention, through research, analysis, experimental projects, and programs to improve host country and Agency ability to:

- identify nutrition problems;
- utilize the private sector whenever feasible to implement the policy;
- design projects to overcome or minimize constraints to meeting nutritional needs of the at-risk population
- target projects to at-risk groups;
- monitor the impacts of development projects on food consumption and nutrition;
- add nutrition components or programs to enhance nutrition impact; and
- strengthen the capacity of indigenous organizations to analyze and overcome nutrition problems.

### Selected Bibliography

#### Intrahousehold Allocation of Food and other Resources and Impact of Women's Work on the Household

- Nieves, I. A Balancing Act: Strategies to Cope with Work and Motherhood in Developing Countries. Paper presented at International Center for Research on Women Roundtable, 1981.
- Protein Advisory Group of the United Nations. Women in Food Production, Food Handling and Nutrition, 1977.
- Safilios-Rothschild, C. The Role of the Family: A Neglected Aspect of Poverty. World Bank, 1980.
- U.S. Department of Agriculture: Consumer Economics Group. Intrafamily Food Distribution, Review of the Literature and Policy Implications, 1982.
- #### Functional Classification of Malnutrition
- A.I.D., Office of Nutrition. Nutrition Surveillance: Review of Progress. 1981
- F.A.O. Introducing Nutrition in Agricultural and Rural Development, Case Studies. 1982.
- Omawale. Nutrition Problem Identification and Development Policy Implications. *Ecology of Food and Nutrition* 9:113-122, 1980.
- #### Effect of Agricultural Development on Nutrition
- Eide, W.B. and F.C. Steady. Individual and Social Energy Flows in Jerome, N.F., R.F. Kandel and G.H. Pelto (Eds.) *Nutrition Anthropology: Contemporary Approaches to Diet and Culture*. Pleasantville, N.Y.: Redgrave Press, 1980.
- Fleuret, P. and A. Fleuret. Nutrition, Consumption, and Agricultural Change. *Human Organization* 39 (3): 250-260, 1980.
- Pinstrup-Anderson, Per. Nutritional Consequences of Agricultural Projects; Conceptual Relationships and Assessment Approaches. Washington: World Bank, 1981. World Bank Staff Working Paper 456.
- Savane, M.A. Implications for women and their work of introducing nutritional considerations into agricultural and rural development projects. *Food and Nutrition Bulletin* 3 (3): 1-5, 1981.