PROCEEDINGS AND PAPERS

OF

THE INTERNATIONAL CONFERENCE ON WOMEN AND FOOD

VOLUME III

UNIVERSITY OF ARIZONA
TUCSON, ARIZONA

JANUARY 8-11, 1978

CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

1978

VOLUME III

of

A Conference on

THE ROLE OF WOMEN IN MEETING BASIC FOOD AND WATER NEEDS IN DEVELOPING COUNTRIES

Focusing on the

United Nations World Food Conference Resolution on

WOMEN AND FOOD

Supported by a Grant from the

AGENCY FOR INTERNATIONAL DEVELOPMENT

ARVONNE FRASER, Coordinator
Women in Development/AID

FRANCES BRIGHAM JOHNSON
AID Conference Manager

SPONSOR

CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

JOHN L. FISCHER, Conference Coordinator
Professor of Agricultural Economics
University of Arizona and
Coordinator of African Programs/CID

KATHLEEN CLOUD, Conference Manager
Research Associate
College of Education
University of Arizona

Proceedings Editor

ANN BUNZEL COWAN
Instructor in Sociology/Anthropology
Pima Community College

TABLE OF CONTENTS

VOLUME III

4

APPENDIX A

BACKGROUND PAPERS

THE RURAL WOMAN AS FOOD PRODUCER: AN ASSESSMENT OF THE RESOLUTION ON WOMEN AND FOOD FROM THE WORLD FOOD CONFERENCE IN ROME, 1974

Marianne Huggard
International Federation of University Women
Representative of the United Nations

OVERCOMING MALNUTRITION IN DEVELOPING COUNTRIES: FOCUS ON WOMEN AND FOOD

Barbara Schick
Head, Department of Food and Nutrition
Clarke College
Dubuque, Iowa

WOMEN, AGRICULTURE AND DEVELOPMENT IN THE MAYA LOWLANDS: PROFIT OR PROGRESS

Olga Stavrakis
School of Agriculture
University of Minnesota, Minneapolis

Marion Louise Marshall
School of Agriculture
University of Minnesota, Minneapolis

SEX ROLES IN FOOD PRODUCTION AND FOOD DISTRIBUTION IN THE SAHEL

Kathleen Cloud
Center for Educational Research and Development
University of Arizona, Tucson

MALNUTRITION IN THE DEVELOPING WORLD

George V. Poyner
Poyner International

ELEMENTS OF THE FOOD PRODUCTION/DISTRIBUTION SYSTEM: AN OVERVIEW ON HOW WOMEN CAN CONTRIBUTE

Douglas D. Caton
A.I.D.
Washington, D.C.

ASSISTANCE, HUNGER, AND MALNUTRITION: THE COMMODITY SYSTEMS APPROACH

Donald S. Leeper
International Food Systems Consultant

A SIMPLIFIED APPROACH TO AGRICULTURAL SYSTEMS

Milo Cox
Adjunct Professor, Renewable Natural Resources
University of Arizona, Tucson

WOMEN, PERIPHERIES AND FOOD PRODUCTION

Elise Boulding
University of Colorado, Boulder

THE WORLD FOOD "CRISIS" AND THE NEW LOOK IN AGRICULTURAL SECTOR DEVELOPMENT STRATEGIES

John L. Fischer
Coordinator of African Programs, CID
University of Arizona, Tucson

THE RURAL WOMAN AS FOOD PRODUCER: AN ASSESSMENT OF THE RESOLUTION ON WOMEN AND FOOD FROM THE WORLD FOOD CONFERENCE IN ROME, 1974

Marianne Huggard

The rural woman -- why has she been over-looked and forgotten in the process of development? If the world is going to achieve the ultimate objective of bringing about "sustained improvement in the well-being of the individual (of bestowing) benefits to all", it cannot afford the luxury of continuing to ignore her.[1] The developing countries with their burgeoning populations are having trouble meeting their food demands; in Africa, for example, "less food was produced per person three years into the second development decade than before the intensive efforts at development started".[2] The time has come when not only the contribution of rural women has to be acknowledged, but also when her role must be expanded and upgraded. One major step forward in this respect was taken with the adoption of Resolution VIII on Women and Food, in 1974 at the World Food Conference in Rome, calling on governments:

> to include in their development plans provision for education and training for women on equal basis with men in food production and agricultural technology, marketing and distribution techniques as well as consumer, credit and nutrition information.[3]

What is now required is commitment and action by developed and developing countries and inter-governmental and non-governmental organizations alike to make these words reality.

The World Food Conference Resolutions was the United Nations' first major effort to draw attention to rural women and their importance as food producers. The International Women's Year Conference the following year also considered rural women. In those minimum targets of the World Plan Action, to be achieved during the first five years, (1975-1980), "recognition of the economic value of women's work in the home in domestic food production and marketing..." and the development of modern rural technology, cottage industry, pre-school day centers, time and energy saving devices so as to help reduce the heavy workload of women, particularly those living in rural sectors..." are specifically mentioned.[4] Other recommendations in the World Plan take other directions. Voluntary task forces should be established to teach basic nutrition and methods of food preservation. Integrated or special training programs should be instituted to introduce rural women and girls to:

modern methods of agriculture and use of equipment, cooperatives, entrepreneurship, commerce, marketing, animal husbandry and fisheries, and in health, nutrition, family planning and education.

The community level should see the formation of cooperatives, "improved, easily accesible, safe water supplies" and the introduction of improved "techniques and equipment for food processing, preservation and conservation." Steps should also be taken to assure women access to credit and participation in the formulation of national plans for integrated rural development.[5] While several of the resolutions refer to rural women, Resolution 21 specifically addresses the Condition of Women in Rural Areas, calling on governments:

To identify needs and to formulate and implement, with greater financial and policy support, rural development programmes, particularly those which benefit women living in situations of rural poverty and disadvantage relative to many;

To carry out the statistical and information work necessary to identify and evaluate the participation of women in productive life and to measure the results of programmes for the betterment of rural life;

To ensure legal parity and economic rights of women in the peasant family as an essential part of any rural development programme...[6]

Following the International Women's Year Conference, the Thirtieth Session of the General Assembly passed a further resolution on Women in Rural Areas. This resolution, considering the role of rural women in the process of national development, through food production and distribution as well as within the family:

Urges all Governments to accord, within their respective plans higher priority for

(a) Gathering relevant data on the status and role of women in rural and low-income areas;

(b) Achieving socio-economic conditions based on the realization of the full and equal partnership of men and women in the development of society, both in law and in fact;

(c) Promoting agricultural productivity, agro-based industries and integrated rural development programmes.[7]

In recent years the various agencies within the United Nations system have moved towards policies of directly addressing the needs

of the poorest of the poor. As the World Bank, for example, found from its experiences:

> the kind of projects which had accounted for the bulk of the Bank's financing, the traditional infrastructure projects, such as highways, railroads, power or telecommunications, benefited much of the population only slowly, indirectly, or sometimes not at all.[8]

The International Labour Organization (ILO), at its World Employment Conference in 1976, adopted a policy of Basic Needs. According to the Programme of Action, Basic Needs includes two elements:

> First they include certain minimum requirements for a family for private consumption: adequate food, shelter and clothing as well as certain household equipment and furniture. Second, they include essential services provided by and for the community at large, such as safe drinking water, sanitation, public transport and health, educational and cultural facilities. [9]

In addressing the needs of the poorest of the poor, it is specifically recommended that:

> Since women constitute the group at the bottom of the ladder in many developing countries in respect to employment, poverty, education, training and status....special emphasis be placed in developing countries on promoting the status, education, development of women and on integrating women into the economic and civil life of the country...[and] that the work burden and drudgery of women be relieved by improving their working and living conditions and by providing more resources for investment in favour of women in rural areas.[10]

At recent meetings of the Board of Governors of the World Bank, Robert S. McNamara, the President, focused on the issue of basic human needs in his addresses. He urged both developed and developing countries to establish "as one of their major goals the meeting of the basic human needs of the majority of the absolute poor within a reasonable period of time..."[11] Since 1974 the Bank has initiated more than 200 projects, "calculated to at least double the incomes of 8 million farm families, or about 50 million individuals."[12] The United Nations Children's Fund (UNICEF) has also adopted a Strategy of Basic Services, embodying:

> ...purposes for expanding children's services in the fields of maternal and child health, nutrition, water supply, basic education and supporting services for women, utilizing the material and human resources available in developing countries, at costs which developing countries can ultimately afford...[13]

While there is no enforcement agency and each country makes its own decisions as to their implementation, resolutions can be extremely important with regard to tne international development process. They serve initially to create awareness and to focus the world's attention on problems. This is particularly crucial in the case of rural women as food producers, since they have not been considered generally as an integral component in development. Even when a resolution has its genesis within the UN Secretariat, it has to be introduced and sponsored by governments, discussed and possibly modified by governments, and, finally, adopted by governments. Focusing bilateral, as well as multilateral, aid on such resolutions adds to their credibility and impact since they are based on a policy or program to which both sides have agreed within the international arena.

Much can be learned from the work of the United Nations agencies involved in development, which can be applied at the bilateral level. The United Nations Development Programme (UNDP) has been focusing increasing attention on the problem of rural women. UNDP is not mandated to carry out programs itself; instead it provides funding for proposals from governments, working closely with such specialized agencies as the Food and Agriculture Organization (FAO), the World Health Organization (WHO), the World Food Programme (WFP), the United Nations Fund for Population Activities (UNFPA) and UNICEF. Through the Area Officers in the four regional bureaus and the Resident Representatives in the field offices at the country level, UNDP is helping to further the integration of women into development. Resident Representatives play key roles in identifying projects affecting women and in encouraging governments to develop such proposals. [14] To this end Guidelines on the Integration of Women in Development have recently been developed.[15]

UNICEF's Strategy of Basic Services is based on the concept of meeting the needs of the people at the grass-roots level.

> Basic services are labour intensive. They mobilize the resource that is abundantly available but substantially neglected -- human resources. A choice need not be made between activities aimed at economic growth and measures for social development. Both are necessary and mutually reinforcing. Involving rural villagers and urban neighbours in organizing their own essential services can be the initiating point for vitalizing the rural countryside or educating urban dwellers to become skilled producers. [16]

Through advocacy, provision of funds for training and the necessary equipment for the implementation of its projects, UNICEF works to effect change in many developing countries. Once a country has submitted a successful proposal, thus inviting UNICEF to work within its borders, the agency will provide funding for the requested training program. UNICEF operates in this manner considering it to be the most effective way to reach the maximum number of people at the grass-roots level. Training, furthermore, is extremely expensive and can be outside the budgets of governments in many developing countries. Under

the Strategy of Basic Services the villagers choose from among themselves people to be 'community workers'. They are then trained outside the village, but return to work with the help and guidance of auxiliary and supervisory staff. While programs are initially in a localized area or region, the ultimate objective is to build up a national system as part of an integrated national development plan. Success at the village level is based, undoubtedly on the fact that the community workers have the confidence of the local people, having been chosen by them and from among them.

UNICEF provides the necessary equipment for the training institutions where community workers are trained, for the training done by community workers and for service institutions, such as day care centers and women's clubs, which play an important role in the programs.[17] Together with other agencies UNICEF is working to develop appropriate technology. To this end, for example, the Karen Centre of Technology has been set up in Nairobi, Kenya, demonstrating equipment made from locally available materials and suitable for use in villages. In Nepal there is such a center on the campus of the University of Nepal. Ideas for appropriate technology are disseminated countrywide by students who spend a year in the field after graduation.

In considering the resolution on Women and Food itself, it is evident that developed and developing countries, United Nations and other multilateral agencies and non-governmental organizations can all be instrumental in its implementation. Decisions on "food production and nutrition policies", which concern women directly, are usually made by men. It is essential that women become involved in policy-making. In this non-governmental organizations can play an important role in mobilizing public opinion, as they can in helping to promote "equal rights and responsibilities for men and women" to utilize women fully in the "battle against world hunger". The developed countries can also help to emphasize the importance of women in decision-making on food related issues by ensuring that women are involved in their

education and training on an equal basis does not necessarily mean providing the same training. In many cases the man is involved in cash-cropping, while the woman is concerned with subsistence farming to feed the family. Unless this is acknowledged, programs developed will do nothing to improve the status of the rural woman; rather she will find herself lagging even further.

What can the developed countries do to help? One area in which they can be active is to provide training programs of the type exemplified in the UNICEF approach.[20] Training must, however, be appropriate to the needs of the recipients and not merely a transfer of "western technology". What is appropriate in Texas or California is not necessarily appropriate in the United Kingdom or France, let alone in Chad, Indonesia or Colombia. Training People from the villages and chosen by the villagers can avoid such obvious pitfalls as choosing people unacceptable at the local level. It is, however, important to see that women are trained to work with rural women wherever possible. Not only have they experienced the obstacles which must be overcome, but rural women can be suspicious of men and may not relate to them.

If rural women are going to receive help and training, it is important that they first have the time to do so . Their willingness to learn new techniques must not be thwarted by lack of time to learn. Only too familiar are the descriptions of the life of the rural woman, such as this one from ISIS:

> From dawn until noon: awakes at 5 a.m., cleans stables, sweeps, feeds cattle, feeds poultry, milks, churns butter, sells any excess milk or milk products in nearby town, makes dough, fetches water from canal, makes tea, washes utensils, bakes bread, cooks the noon meal. In between, cares for children and attends to field work.
>
> From noon until sunset: makes and serves afternoon meal fetches water from canal, cleans utensils, washes clothes at canal, prepares cowdung cakes for fuel, collects fodder for cattle. In between, looks after children.
>
> From sunset until late evening: Feeds cattle, milks animals, heats milk, prepares milk products, cooks dinner, makes tea, arranges bedding, puts children to bed, herself retires about 10 p.m.,[21]

Time for any training in such a schedule is practically impossible. As a preliminary step some help must be given to make time available for this purpose. There can be no overall strategy for this, as it requires examination at the local level on a case-by-case basis to see what is most appropriate in any given area. For some women it might mean a nearer supply of water; for others, a more accessible source of firewood; or for another group, the provision of storage bins.

Developed countries can also help by providing the appropriate technology necessary to improve both farming techniques and nutrition standards. There are several 'lists' of appropriate technology for use in the cultivation, storage and preparation of food. Of high priority in many areas is the provision of accessible, clean, safe water. This may sometimes involve digging wells, at others they may require the means to collect rain water run-off. Where wells exist, the building of walls or other protective measures may be needed to ensure that the water is pure.

One of the ways to improve nutrition is to encourage better farming techniques. This might include, for example, diversification of crops which could involve not only training for rural women in their cultivation and use, but also the use of trained experts for soil-testing. Simple methods of food preservation and storage can help to reduce the amount of food lost, at the same time improving its nutritional value. With the introduction of such activities as rabbit, poultry or bee keeping, women can feed their families better and also move away from purely subsistence farming. Keeping 15-30 laying chickens, for example, can produce 6 - 12 eggs a day, enough for both family needs and sale.

Rural women usually lack training in the whole area of marketing and distribution techniques, credit and money management. Women may participate in the marketing system in the following ways: they may be part of a formal marketing structure, such as a cooperative or association; they may sell as individuals in the market place, provided that they are not geographically isolated or prohibited through local custom; or they may sell through a middleman, who will obviously buy only those items which he/she can sell easily.[22] With the right kind of training women could bypass the middleman, thereby realizing greater profits while learning how to adjust to consumer demand. Where it would be impossible or disadvantageous to bypass the middleman, organizations of producers' associations or cooperatives might be able to reduce the middleman's profits. Courses in such subjects as selling, simple arithmetic and simple book-keeping are therefore extremely valuable. A rudimentary knowledge of money-management is a prerequisite for setting up and running a successful cooperative as are simple skills in such procedures as record-keeping, purchasing, packaging, and quality control. As consumers, women often find themselves forced into situations of having to buy inferior quality goods since they are unable to afford the initial outlay on the more expensive, yet better quality, items. Therefore, the knowledge of how to check quality and price can be invaluable to them.

The importance of obtaining credit as a means to step up from the purely subsistence level cannot be over-emphasized. Toward this end developed countries can be of substantial help in breaking down the barriers to credit by establishing fund sources ear-marked for women and by working with existing lending facilities and banks to ensure equal credit accessibility.

That the rural woman serves a dual role in her society cannot be denied. On the domestic side as wife, mother, educator of her children and frequently de facto head of household, she faces very real problems. In her role as a productive member of the agricultural force she toils, unpaid and unacknowledged. Her status in both roles can be enhanced through the resolution on Women and Food. Through its full implementation, she will be able to make her full contribution to the development process.

Bibliography and References

1. United Nations. World Conference for the International Women's Year, The Role of Women in Rural Development, Prepared by the Food and Agricultural Organization (E/Conf. 66/BP 11), 24 March 1975, p.3.

2. UNECA. The Food Situation in Africa, Towards an African Food Development Plan (E/CN.14/618, Annex 1), April 1974

3. United Nations. World Food Conference (E/5587), 22 November 1974, Resolution VIII.

4. United Nations. Report of th. World Conference of the International Women's Year, (E/Conf. 66/34), 19 June - 2 July 1975, pp. 16-17.

5. Ibid., pp. 21-26 passim.

6. Ibid., pp. 96-97

7. United Nations. General Assembly, 30th Session, Resolution 3523 (XXX). 15 December 1975.

8. United Nations. World Bank, Integrating Women into Development, August 1975, p.5.

9. United Nations. International Labour Organization Declaration of Principles and Programmes of Action Adopted by the Tripartite World Conference on Employment, Income Distribution and Social Progress and the International Division of Labour (WEC/CW/E.1), June 1976, p.4.

10. Ibid., p.6.

11. United Nations. World Bank, Address to the Board of Governors, Robert S. McNamara, President of the World Bank, Washington, D.C., 26 September 1974, p. 28.

12. United Nations. World Bank,Address to the Massachusetts Institute of Technology, Robert S. McNamara, Massachusetts, 28 April 1977, p.32.

13. United Nations. General Assembly, Thirtieth Session, Resolution 3407 (XXX), 28 November 1975.

14. Projects below $400,000 can be funded at the field level.

15. United Nations. United Nations Development Programme, Guidelines on the Integration of Women in Development (G3100-0) 25 February 1977.

16. United Nations. UNICEF, A Strategy for Basic Services, New York, n.d., p.6.

17. United Nations. UNICEF Guide List ISIS. Women and Development. Prepared in colsultation with ILO, FAO, UNESCO, and WHO, (OSU-6410), September 1975, p.23.

18. World Food Conference Resolution VIII, paras. 1, 2, & 4.

19. See above p.1.

20. See above p.8.

21. ISIS, p.143.

22. Ibid., p. 136.

OVERCOMING MALNUTRITION IN DEVELOPING COUNTRIES: FOCUS ON WOMEN AND FOOD

Barbara Schick

No one quarrels with the general notion that good food and water are among the most basic needs of all mankind. Yet this fundamental need apparently did not gain recognition on the highest international levels until the 1960s. Together with this new awareness, we now need a commitment to do something about the problems of malnutrition both in the United States and abroad. The thrust of this paper will be to address issues related to the role of women in overcoming poor nutrition in the less-developed countries. I do this from the viewpoint of a trained nutritionist, a housewife and mother, and of one who lived for a year in the developing world, in the Mideast.

My procedure will be essentially threefold: (1) to describe adequate nutrition, (2) to suggest major constraints to overcoming malnutrition[1], especially when considering the role of native women in the process, and (3) to outline some procedures which could improve nutrition in the developing countries from the standpoint of using women to do so.

I. The Role of Women

The World Food Conference in Rome in 1974[2] recognized what women everywhere have always known: that most women play the major role in acquiring and preparing food for themselves and their families. Many women, especially in developing countries, also produce the foods themselves. They farm a family garden, while the men, if they are engaged in agriculture, produce "cash crops" such as cotton, tobacco, cocoa, coffee, tea, rubber and sisal. In rural areas where food is raised for market, the people are frequently forced to sell this much-needed food at low prices at harvest time to pay off debts and then buy it back later at higher prices.

How, then, can the woman in a developing country be supported, encouraged and helped in the procurement of a family food supply that provides adequate nutrition for herself and her family? Women in the colonial regimes were often not given credit for their contributions to economic progress even though the system only worked because the women stayed on the farms and grew food for the workers who grew cash crops or worked in the non-agricultural sector. The time has arrived to give credit where credit is due.

II. Adequate Nutrition

Let me make sure that we all understand what I mean by "adequate nutrition." Proper nutrition does not consist in eating any specific foods, as some believe, but in eating a variety of foods that provide the body with the chemical substances we call "nutrients." These nutrient chemicals number roughly 50 and can be broadly grouped into six major classifications: carbohydrates, lipids (fats), proteins, minerals, vitamins and water. The cells of an organism use these chemical substances to: (1) furnish energy, (2) make and replace cells, and (3) provide for the normal regulation of the body systems. "Adequate nutrition" means providing the body with sufficient nutrients to keep it healthy and functioning properly. The amounts of the nutrients believed to be necessary to do this vary according to age, sex, body size and composition, and state of health.

Three of the nutrient groups (carbohydrates, lipids and proteins) supply energy (usually expressed as Calories) to the body. In the less-developed nations, where malnutrition is prevalent, the critical need appears to be for both sufficient Calories and enough of the right kinds of protein. During digestion, protein is broken into its constituent amino acids, and for this reason, it is actually more correct to say that amino acids are necessary in the diet rather than simply specifying the broad group "protein." Proteins vary in amino acid content depending on their source. However, unless all the necessary amino acids are present in the body, the cells act as though all were missing and cannot make new cells or replace those that regularly die off or are used for energy. When Calories and protein are insufficient in the diet, there is usually also a lack of other nutrients.

Assume that a diet (combination of foods) is available and that will be nutritionally adequate. That is only the first step in overcoming or preventing malnutrition. The individual must eat the foods and digest them properly as the second and third steps in a complex process. In proper digestion, the body's digestive fluids change the complex food molecules present in foods into simpler units which can be absorbed through the intestinal wall and into the bloodstream. The blood then transports the nutrients to the cells. If, however, a critical enzyme is lacking, digestion will not function properly.

When digestion proceeds normally, there follows the fourth step or phase called absorption. After digestion of large food molecules into small chemical units, the intestine must be healthy enough to permit passage of these substances into the blood. Anything that affects the normal configuration of the intestinal membrane or that causes excessively rapid passage of food through the gut, will interfere with the ability of the body to absorb nutrients. Infection by bacteria or infestation by parasites are conditions often rampant in the poor sanitary conditions of the developing world. These can damage the intestional tissues or cause diarrhea and loss of nutrients from the body. Most infections are accompanied by fever which further increases

the need for Calories and nutrients. Obviously this exacerbates the problem of nutrient deficiency.

Finally, assume that digestion and absorption will be able to proceed as they should, the fifth and sixth phases in the body's utilization of food molecules are cellular metabolism are excretion. These incredibly complex series of chemical interactions determine whether persons will use the nutrient molecules for energy, cell growth and replacement and body regulation, and will also excrete the normal waste products as they should.

From this quick "overview" of my six steps of what nutrition is all about, it should be obvious that we are dealing with fantastically complicated biological systems. Fortunately, these systems function in healthy people without any conscious thought. However, when they malfunction, we are in trouble. Malnutrition may cause the trouble as is the case in severe protein deficiency during which antibodies, hemoglobin, cells, etc. are not formed. Or poor nutrition may be a result of the trouble as in diseases of the gastro-intestinal tract where there is malabsorption of nutrients.

III. External Constraints

Assuming that the biological systems are all functioning up to par, there are nevertheless other constraints on woman's providing adequate nutrition for herself and her family. These are the "external" factors that affect food availability and nutrition:

A. A lack of storage facilities. Grains and other foods are lost to rats, insects, mold and bacterial destruction. What role can woman play in the fight against pests that destroy an estimated 1/3 of world's crops?

B. A lack of processing facilities for mer perishable foods. This gives rise to a "feast or famine" situation. In time of surplus, perishables are wasted. Then there are weeks or even months of sub-subsistence level meals. How can women be helped to develop simple techniques of food preservation to stretch the newly harvested food over a longer period of time?

C. Inadequate distribution systems. This means that within any given country one area can have greater need for food while another has plenty or even a surplus. A case in point would be Ethiopia. In the north, people were starving while in Addis Ababa there was sufficient food. Moreover, because of news control, the people in the south were oblivious to the fact that those north of them were in need. For example, some delegates to the World Food Conference of 1976 in Ames, Iowa[3] were still expressing the guilt they felt for not being informed about the true situation.

D. Economics facts of life. Often these facts dc not permit the acquisition of a varied diet. In reality, this may be the greatest constraint of all. So the woman of the household must get along with what she can purchase (or barter for). Buying the least expensive foods means that families end up with diets high in carbohydrates and devoid of high quality protein (such as meats, poultry, eggs, cheese and milk). In those countries or areas where a family cannot hope to own as much as a hectare of land, this constraint becomes even more acute.

E. Inadequate sanitation. Clearly this is a serious problem in the less-developed countries. Diseases of the gastro-intestinal tract, caused by bacteria and parasites in food or water, result in severe malabsorption syndromes. The August and September 1977 issues of the American Journal of Clinical Nutrition (vol. 30, nos. 8 & 9) are devoted to proceedings and papers of a Symposium on the "Impact of Infection on Nutritiona Status of the Host." The workshop was held in Warrenton, Virginia, in May of 1976 under the auspices of the Food and Nutrition Board of the National Academy of Sciences--National Research Council. Funding was provided by AID. These volumes are extremely helpful in providing concrete information on the effects of poor sanitation and gastro-intestinal diseases on malnutrition.

F. A lack of knowledge about nutrition and the importance of eating a variety of foods. In some developing countries education for women is advocated, but education for what? A higher bride price? Or for a greater role in preparing women to aid in the development of their country? An impression I gained at the Ames Conference is that more developing countries than do so now need to link learning to the needs and problems of the countries themselves.

G. Professionals themselves. They, too, can become a constraint in the process of providing adequate nutrition. Sent into a country to assist those who need help most, some professionals find it very easy to affiliate with the Department of Health or the Extension Office in the large city where the amenities of western life are most apt to exist. Gelia T. Castillo, Professor of Rural Sociology at the University of the Philippines, spoke to the World Food Conference of 1976 in Ames charging that we must reach the farmer (woman or man) if we wish to promote rural growth and development.

> "Extension work is not a glamorous job. Work overload, low pay, meager transportation allowance, difficulty in convincing farmers on the merits of innovations, presence of factional groups among farmers, lack of confidence in the worker, unrecognized performance, etc. are frequent complaints. Anyone who has seen the extension agent at work in our village knows what these mean. All of us ought to try it sometimes if only to teach us some humility and a little bit of sincerity in what we profess." (p. 49, Proceeding, The World Food Conference of 1976, Iowa State University, Ames, Iowa).

To what extent are nutrition professionals available to the most seriously affected food-deficient countries and people? Is their work curative or preventive? How can the message they have to share reach the women who will profit most from it and share it, in turn, with their neighbors?

H. Constraints on the nutritional practices of a family or village by culture, religious beliefs and social values. How can the women of a community help us understand the prevailing practices and values? If the women and children habitually eat after the men have satisfied themselves with the choicest morsels, can this kind of practice be changed? In any given culture, people are very carefully taught what they ought to eat and how to eat it; what is acceptable as food and what is taboo. They do not by instinct choose the foods which are the best for them. In a different environment, they eat what is available and sometimes learn by trial and error that some foods are better for them than others. Attempts to change this may mean better nutrition, but at the same time, change may mean the destruction of something very basic to the culture. Is that desirable, or it is too high a price to pay for nutrition?

I. Attitudes about women. In some areas, women are still thought of as something less than men, not only by the men but also by themselves. Employment laws can group women and children together, that is with only juvenile status. Women may be de facto heads of households but still not able to buy or sell cattle or to make decisions about the planting of permanent crops. Male attitudes are often patriarchal; what is good for a man is automatically assumed to be good for the family. It is not uncommon for men to take the attitude that relieving women of some of their burden of work would make them idle and perhaps give them leisure time to be unfaithful. In general, the relative importance given to the role of women in society by men is reflected in the makeup of the budgets for development programs.

J. Language barriers. In most of the less-developed countries individual communities or small areas group together on the basis of dialect or language. Before professionals can attempt to make an impact on the nutritional needs of these people, the professionals must have sufficient command of the local language. Rather than using highly trained professionals, how can the women in a locality be used to communicate to their neighbors in their own language the basics of nutrition? Will a woman return to her village if she is sent away for training? Is it better to train the professional non-native in the native language or dialect?

In other words, the American Indian proverb may be quite appropriate to all those attempting to strengthen or encourage women in development, using food as the focus of the attempt: "To understand me, you must walk many moons in my moccasins."

IV. Procedures

In attempting to devise systems to overcome (or preferably to prevent) malnutrition, i.e., to put more nutritious food into the market-basket of the women in a developing nation, the following would appear to me to be essential:

A. A dietary assessment or evaluation. This means finding out what the people eat and why. It may turn out, as Jean A.S. Ritchie[4] suggested at the Ames Conference in 1976 that in some areas just more of what is already eaten would be the solution to the malnutrition problem. Or it may be that substantial changes in food intake patterns are needed. Native women could be trained to do the diet history recording. It may take professional nutritionists to evaluate the findings, but native women can be taught to find out what the people eat and to shed light on why these foods are eaten. If the country has a university with a School of Nutrition, this would be the logical place for training the native women, e.g., via extension personnel. If not, an alternative would be necessary, perhaps the Medical School.

B. Preparation of a Handbook of Food Consumption. The nutritionist needs accurate information about the nutrient value of foods characteristic of the country or area as they are commonly prepared. Analyses should be based on the local foods, not on American equivalents. If the work cannot be done in the universities of the country, then the U.S. colleges and universities might be asked to provide the information by doing the actual assay work. I have done dietary consulting for Arab patients in a hospital on the West Bank in Israel. Without the Handbook of Food Composition prepared by the American University in Beirut, I could, at best, only have guessed at values. There is no cereal enrichment program in this area and bread and rice are mainstays of the diet. Moreover, the way in which the rice is prepared is entirely different from recipes in U.S. cookbooks. Therefore American food composition tables do not apply. Knowing the enormous task of preparing a USDA Handbook No. 8 or Nos. 456, an American might shrink at the thought of preparing a similar document for a foreign country. But in my experience, the number of foods eaten in less-developed countries is limited and the task would not be nearly as time-consuming nor as expensive as it might at first appear. Certainly its usefulness to the nutritionist would justify the project.

C. A survey of the extent of infectious and gastrointestinal diseases. Such diseases produce a vicious cycle. Infections cause nutritional deficiencies and deficiencies, in turn, make persons more susceptible to further infections owing to reduced antibody production or damaged epithelial tissue which permits bacterial invasion.

Information would be available on those people admitted to hospitals, but village women could be trained to ferret out the extent of cases not seen in the clinic. The epidemics of cholera that decimate a community would of course be reported. The difficulty remains to detect those problems that are not reported to the nurses, doctors, or paramedics.

If diarrhea is not checked quickly, nutritional status is severely affected by water and electrolyte losses of considerable magnitude. Many mothers I met in the Mideast thought of chronic diarrhea as normal and only when the child became seriously dehydrated was there a move to the clinic for treatment.

D. A consideration of the possibilities for dietary improvement suggested by the above surveys:

(1) Providing some foods in greater quantity, perhaps initially with the help of PL480 but with the aim in mind to increase the native production as soon as possible.

(2) Providing food of better quality, particularly as relates to proteins and their amino acid content. If one knows the cereals available and accepted in an area, a nutritionist can suggest ways in which they may be used in a complementary fashion, e.g., a grain low in one amino acid is balanced at the same meal by the use of another cereal which contains the amino acid missing from the first. Careful choice of cereal combinations can meet the "all-or-nothing" rule about protein presence. Wise use of complementary cereal proteins markedly reduces the need for animal proteins (meat, poultry, fish, eggs, and milk) which are normally prohibitively expensive in less-developed countries and in the lower socioeconomic families. This also needs to be done circumspectly because plant foods do not contain vitamin B_{12} and therefore without animal foods in the diet the vitamin must be furnished or Pernicious Anemia is likely to develop.

(3) Enriching or fortifying local foods with vitamins, minerals and amino acids, as needed. While this may be expensive, it may be less expensive in the long run than the medical treatment necessitated by not doing so.

(4) Introducing new foods or new ingredients for food dishes. Success stories with CSM (corn, soy, milk meal for gruels) in the Mideast, Incaparina in Latin America, lysine-fortified Modern Bread in India, or Sam Yang fried noodles in Korea are encouraging, but they are still relatively few and far-between.

Unless the people eat it, the food introduced by technology is worthless no matter how nutritious it is. How can the women of a country be involved in the development of acceptable "recipes" for proteins from unusual sources?

Some successes have been reported when the target group for a more nutritious, though unusual, product was the people who are affluent and powerful rather than those who are poor and who need the improved nutrition most. When the affluent accept a new product and the word gets around, the poor seem to become good imatators.

Nevertheless, it probably remains true that any new foods, processed items or hybrid seeds (of the Green Revolution) will have little

immediate impact on the total, overall masses of malnourished people. There are two reasons for this: either they will be foods or have characteristics that are strange and not readily accpeted, or they will cost more, if available, than the old, familiar foods.

V. Education

If food is considered as the prime focus for the country's development and if women are regarded as the most logical and practical means of providing adequate food for the family, then education becomes the indispensable kwy to the understanding of proper nutrition, to the removal of constraints and to the implementation of solutions.

Women must learn the value of a varied diet as over against one that is primarily carbohydrate. They need to be encouraged in all efforts to produce food for the family. They should have access to suitable tools as well as helpful information about good agricultural methods.

Women also ought to be taught the essentials of sanitation so that nutrients consumed by the family will not be lost by poor absorption or by infections that raise the metabolic rate. Things as simple as netting over the baby's bed to keep flies off the sleeping child, or boiling the water before drinking it can make substantial difference in the source of disease.

Women must begin not only to understand their own economic worth but also to capitalize on it by insisting on the right to make basic decisions in partnership with men, but especially if the women are heads of the household.

They must have enough nutrition education to know how to spend meagre resources for foods that have the greatest nutritive value. And following the purchase of such foods, they need to know how to prepare them in ways that will retain maximum nutrients, for example, reducing the cooking time, the amount of water used for cooking, and the area of cut surface of vegetables exposed to oxidation. Such practices save the water-soluble vitamins C and B-complex.

Women ought to band together to preserve foods that are lost to pests or wasted because they are perishable. They can be taught simple methods of pest control, and a community-based canning center would not be very expensive or difficult to establish. Jars and a pressure canner are reusable and an excellent investment in those areas where food processing plants and grocery stores do not exist. A wood-burning "cook stove" like those of early America could provide the necessary fuel for a central canning operation.

Women need access to professionals (public health or extension nutritionists and agriculturists) on a regular basis, especially in the early stages of development. The professionals will have to get "into the field" because it is most unlikely that the native women can get to the urban centers. Eventually the goal ought to be to train the local women to teach their own people.

They ought to be respected for their uniqueness in culture and as much as possible, the social and religious aspects of their lives (including food) should be guarded and cherished.

In providing better nutrition to a food-deficit country, there may always be a need to set priorities among age groups. Assuming this, I would want to work first with pregnant and lactating women who are not only at nutritional risk themselves, but who also control the feeding of infants and children. The latter are especially vulnerable to infection and other effects of a poor diet such as retarded physical and mental development. The problems are especially crucial if the mother or mother-to-be is an adolescent because the needs of pregnancy and lactation are superimposed upon her need for her own growth and development.

Pregnant and lactating women have the greatest nutritional needs (both Calories and nutrients) of any gruop of a female population. Providing proper nutrition assures a greater likelihood that a woman's newborn infant will be healthy and that the mother herself will not suffer toxemia or other ill consequences in the process. Mobile or permanent prenatal and post-natal clinics where good nutrition and basic sanitation can be taught are important. The positive values of lactation could also be stressed.

I would try assiduously to involve the fathers in the sessions for pregnant wives. I recognize full well the difficulty in doing this in many areas, but I do believe that the results in terms of improved attitudes toward women would be immeasurable.

When solid foods are introduced into the diet of the infant, simple, appropriate technology for preparing infant foods is available in the form of the hand-driven Foley-type food mill which mashes the family vegetables, fruits or other foods to a strained consistency. Some Tanzanian students I taught a few years ago were thrilled to know of the existence of such a household gadget and bought a supply to take home with them. For the American woman who turns on her energy-requiring electric blender for such tasks, or who depends on the baby foods put up in jars by industry, this may seem a strange delight indeed. We often forget how efficient the simple instruments of our own pioneer days really were. The price of this simple mill-strainer would be insignificant when compared with what it might offer the homemaker. In the Mideast, at a nutritional feeding center in Jordan, I saw such a mill being used and have wondered since why it seemed to be limited to use in feeding centers. Why not improve them to the community or village?

VI. Summary

Adequate nutrition is both a measure and a goal of development. If food is considered as a basic human right and becomes the focus of a country's strategy for development and if women are regarded as the logical resource for providing the right food, then it becomes necessary to speak to the three issues addressed in this paper: (1) the components

of proper nutrition, (2) the constraints which hinder the process, and (3) ways in which at least some of these roadblocks can be surmounted. Any social situation has some potential for improvement. Women, by acquiring education, can be the agents of change in overcoming and preventing poor nutrition.

The suggestions given with the three issues of the paper are in no way thought of as all-inclusive. It has been my intention to face some of the constraints in the present system with a few practical, possible solutions. My understanding of the AID/WID Conference in Tucson is that we will pool the ideas of many people and attempt to arrive at solutions which are both helpful and practical as well as economically feasible. There will be people who have worked "in the field" far more than I have who can assist us in determining whether any given idea has been tried and whether or not it has been successful.

VII. Bibliography and Reference

1. For purposes of this paper, 'malnutrition' consistently refers to inadequate intake of food or food deficiency, although malnutrition, in its fullest sense, means all forms of bad nutrition, including also obesity and the problem which excess food intake pose.

2. The World Food Conference held in Rome, Italy in November of 1974 was attended primarily by Heads of State and politicians. It was a major breakthrough in terms of the fact that so many nations of the world gathered to discuss the serious problems of food and nutrition.

3. The World Food Conference of 1976 was held at Iowa State University in Ames, Iowa. Its theme was: "The Role of the Professional in Feeding Mankind."

4. Jean A.S. Ritchie is FAO Planning for Better Family Living Advisor, U.N. Economic Commission for Africa.

WOMEN, AGRICULTURE AND DEVELOPMENT IN THE MAYA LOWLANDS: PROFIT OR PROGRESS

Olga Stavrakis
and
Marion Louise Marshall

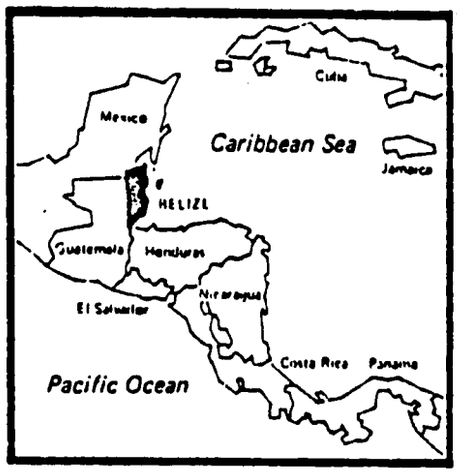
I. Introduction[1]

It has often been argued that the standard type of "development" based upon the production of export crops has benefited only the very few able to exploit the new opportunities but not society as a whole. More recently it has become apparent that while men benefit from agricultural modernization women may actually lose and the growing child may pay the price.[2]

Our research, carried out in a small community in Central America, documents in some detail the actual process of change which took place with the development of the sugarcane industry. A connection is made between the rapid rise of sugarcane production in 1973 and three other factors: the decline of food production, the loss of female resource base, and the lack of improvement in child nutrition. It is suggested that the present situation is a result of a number of factors which dictate "profit not progress."

II. The Village

The village which we studied lies in the sugarcane district of northern Belize, a self-governing British Protectorate, on the coast of the Yucatan Penninsula in Central America. The village will be referred to as Rio Hondo. The country is inhabited by a mixed population of some 137,000 people of Maya Indian, Afro-Caribbean, East Indian, and European origins. There are approximately 300 inhabitants of Maya/Spanish origin in the village which is located in what is generally called the Maya lowlands. The area is cultivated by small groups of slash and burn farmers who plant corn as their staple crop.[3]



BELIZE

III. The Problem[4]

From all standard economic indicators it appears that the northern area of Belize is developing rapidly. Between 1973 and 1974 the income in a few families in Rio Hondo rose astronomically, perhaps jumping from US $1,000 a year to as much as US $13,000. For the rest, the very poor farmers who may have made only US $300/year, income doubled or tripled by working for the more affluent. During this time some families began to plant sugarcane because the price was good and climbing. The more affluent farmers in the district who owned their own land and had collateral for loans rushed into sugarcane first. But the more traditional farmers did not jump into cane so rapidly either from preference or an inability to do so. Unfortunately, however, due to sugarcane expansion most of their fallow land became appropriated for the cash crop. Although these traditional families did not wish to work as labor, the males were forced to seek temporary jobs just to break even as prices soared.[5]

After the lucrative 1973 season the number of small sugarcane farmers grew by leaps and bounds. Second hand trucks, tractors, pickups, and large fourteen-ton haulers began to appear everywhere in the District and money seemed to pour into men's hands. This was prosperity, but prosperity at a price, and then only for a few! For money flowed out of the system as fast as it came in, spent on drink, trucks, travel and purchased female companionship. By and large it did not benefit the women at home tending the children and animals. Thus, it did not have any effect on the already marginal diet of small children which remained unchanged during and after the cane boom. Those families which decided to stay with the old values and produce food crops became the poor in a society which redefined what was rich and what was poor.

Yet, while money flowed freely in the north, food was seriously short both there and throughout the country as the production of food crops had gone down. Most important, a series of new social tensions and frustrations developed within and between families formerly

accustomed to cooperating. This took place in spite of the fact that the GDP of the country had doubled between 1973 and 1976. Why? In the following pages we try to describe the changes taking place and analyze them in the context of the cultural process.

IV. The Decline of Food Production

Prior to the tremendous increase in cash cropping, several food procurement systems were utilized. There were the slash-and-burn plot (milpa), the kitchen garden, hunting and gathering, animal husbandry, and fishing. Labor was strictly divided between males and females, the males operating within the domain of the forest, practicing milpa agriculture and hunting and gathering. The females cared for kitchen gardens and dooryard animals. These different food procurement systems complemented each other and provided all the needed foods. They were regulated by strictly defined social obligations which maintained cooperation and stability. Some cash was also needed, however, for clothes, medical care, and increasingly for those things which ceased to be produced locally. Men made some cash by occasional labor but women depended upon food production for cash, either selling some of their garden produce or feeding their dooryard animals and selling the meat.[6]

Each adult woman customarily tended a kitchen garden an area 1/4 to 1/2 an acre beside her house. Fruits, vegetables, nuts, seeds, herbs, greens, tubers, and utilitarian household materials could be harvested year round from this garden. Up to 40 species of plants have been found in any one garden. This type of technology represented an intricate and well-adapted system which maintained high fertility and land productivity under tropical conditions by manipulating the competitive and complementary attributes of plants.[7]

The women also cared for a large variety of dooryard animals. Pigs, fed on kitchen scraps as well as corn and other products from the milpa, which might otherwise have spoiled, provided women with a much needed source of cash. Each woman usually kept four or five pigs, a couple of castrated males for food and/or money, an older breeding female to give young, and one or two younger pigs to butcher on special occasions. Depending upon the food supply and hence the growth rate of the animal, it could reach 150 lbs., within a year, bringing in up to US $48.00 (in 1973). Each woman also had two or three dozen chickens and laying hens exclusively for household consumption. Most women raised turkeys for special occasions, and a few ducks, pigeons, and/or geese. These also were fed a combination of maize and table scraps.[8]

Men customarily produced field crops through slash-and-burn agriculture. A plot of high forest in the jungle was felled with a machete. The bush was left to dry after which it was burned. After the first rains came, it was planted with corn and intercropped with numerous other plants. Two consecutive years of planting were possible before

yields started to go down rapidly due to nutrient loss and weeds at which time a new plot was sought. The old plot remained in fallow, ideally for 10 to 12 years, to replenish all the soil nutrients.[9]

Although food production began to decline a number of years ago, this decline was speeded by the rapid acceptance of sugarcane. Sugarcane not only created a land shortage but also it hastened the cultural devaluation of local foods and local agriculture practices. In 1973 the standard fallow cycle was still 6 to 8 years and in 1976 it had been reduced to 2 or 3 because much of the fallow land was taken up for sugarcane. Shortening the fallow period without appropriate intensification led to progressive deterioration of the soil and diminishing yields.

As illustrated in Table I, with a 12 year fallow cycle, expected yields in Rio Hondo were 2,500 lbs/acre of corn plus the intercropped beans, cassava, tomatoes, Xanthosoma, squash, and others. When the fallow cycle was reduced to 4 years, the expected corn yields went down dramatically, and with the decreased time investment the intercrops were reduced. Between 1973 and 1976 a good yield was considered 900 lbs/acre and few males actually harvested that much.[10]

TABLE I

Comparison of expected corn yields with 12 year and 6 year fallow cycles

Milpa Size	Fallow Period	Amount of Fallow Land	Expected Milpa Corn Yield	Intercrops
5 acres	12 year	60 acres	2,500 lbs/acre	40 species
5 acres	4 year	20 acres	900 lbs/acre	5 species

Customarily, 25-40% of the corn yield was fed to pigs and chickens by the women. This represented that part of the harvest which was spoiled or blighted. Therefore, the reduction in milpa yield had immediate consequences for women.

Although planting milpas of approximately the same size as before, many men now prefer to invest less time and effort in their care. Whereas in the past prestige for a man was tied to good milpa production, with the coming in of western values and the creation of new wants and needs, a prestige system based upon western material goods penetrated the society. Since the villagers did not possess these goods and, in the past, had no means by which to acquire them, by definition, they were "inferior." When the opportunity to acquire goods came by way of sugarcane, it came only for the males. No such opportunity offered itself to the women. At the same time, traditional methods of production, local crops, and local foods became identified with the "inferior" past.[11]

Changes in production go hand in hand with changes in consumption. As the local foods lost their prestige value, women's gardens became obsolete. The actual changes in consumption we documented between 1973 and 1974 indicate that consumption of local fruits had declined by 34% in spite of the fact that trees were still in the gardens, still bearing fruit. The consumption of meats and fish also declined but the precent of canned meat in the sample went up from 13% to 19%. Consumption of soft drinks and frozen koolaid increased by 255% and intake of cookies and sweet prepared foods increased by 25%. In 1974 total consumption of corn, beans, rice and wheat increased by 19%. The greatest increase was in wheat consumption which represents a significant shift in food preferences as wheat had gone up in price between 1973 and 1974 more than had maize. In 1974 rice was almost unavailable for part of the year and the price had risen sharply. Neither rice nor kidney beans, which had in the very recent past been produced locally, were grown within the community.

These changes in production and consumption had repercussions upon the social organization of the household and the community. The greatest effect of these changes was felt by the women whose food production alternatives had suddenly radically decreased.[12]

V The Loss of Women's Resource Base

The decline of the milpa, the obsolescence of the kitchen garden, and the shift towards purchased foods have had a negative impact upon the activities of the women. As a result, women have lost much of the control over their productive resources and have become economically dependent upon males. Food production in Rio Hondo is no longer the cooperative venture between a man and a woman it once was. Most men no longer bring home their harvests. Some simply do not produce enough while others sell it outright. Thus there is little to exchange with relatives and almost none for pigs and chickens, two areas in which female power was based.

In the traditional system the produce from the milpa, brought home by the man and turned over to the woman for storage and distribution was basic to her social and economic power. A certain portion of the harvest would be given out to relatives to return for past favors and gifts of food as an insurance policy against future harvest failure. For example, a sack of corn might go to a female relative whose husband failed to produce enough food. This exchange network among women provided an important insurance against male failure and therefore it was equally important to the men who depended upon these reciprocal obligations in times of "bad luck" with their milpas.

Making use of the 25-40% of the harvest which was spoiled or blighted and, thus, unfit for human consumption, women fed their pigs. Plenty of corn meant women could raise sufficient pigs for their economic and nutritional needs and those of their children. In Rio Hondo, as in the rest of Belize, pigs belong to women and are the main independent source of food and money which can be measured and documented.

The changing emphasis on cane production has seriously endangered women's village pig production because corn is now becoming a scarcer commodity.

The reduction of locally produced meat is nutritionally and psychologically important, because often there is no alternative source of meat. Although villagers may have money to purchase meat from outside there have been frequent well-documented shortages in the area. Indeed the demand for village pork meat always exceeds the supply and people are turned away empty handed after a butchering.

Pigs are crucial to the reciprocal food exchanges operating in the village. Women regularly send live young pigs or hunks of pork to friends and relatives in Rio Hondo. These exchanges regulate the supply of meat, whilst cementing ties and relationships. In addition, pigs are the foundation of feasts, often being set aside for a special occasion from the day they are born.[13]

Women maintain this resource at little energy cost to themselves. Pigs fed on table craps and spoiled corn and that forage for themselves to supplement their diet, take little time and money to raise. Women do not manipulate their herds and, in general, practice a kind of benign neglect where their pigs are concerned. The pigs themselves serve a useful function in cleaning up garbage and converting it into food for the table.

Unfortunately pig numbers showed a considerable decline between 1973 and 1974, when village herds dropped by approximately 50%, partly due to hog cholera, a cyclical disease. There were about 250 pigs in Rio Hondo in 1973. By 1974 this number had dropped to little over 100. Of the 28 households raising pigs in 1973 only 17 were doing so in 1974. This local decline was reflected in the national level, the number of pigs slaughtered in 1973 in Belize was 9,439. This number sank to 5,795 in 1974, roughly a 50% decrease. Significantly, although there were shortages throughout the country, more than 2,000 hogs were exported in 1974. [14]

The most significant percentage changes in pig numbers, corn yields, and cane production took place in 1974 (Figure 1) which was a bad year for everything except cane in Rio Hondo. The corn data dre deceiving because mecates planted are shown (one mecate equals 1/8 of an acre) rather than yields harvested and as previously discussed, yields had significantly declined. The massive jump in cane planted, from less than 50 mecates in 1973 to over 1000 in 1974, can be seen.

Because food production has always been woven socially and ideologically into the culture, the change in production patterns has ramifications throughout society. One of the most significant has been the removal of the source of male prestige from the domestic household activities of producing good food and good children and the creations of a new "public" sphere of activity which is western and modern in nature, characterized by material goods. The women's activities are

relegated almost totally to domestic sphere, whereas, the acquisition of prestige and status, once accessible to both men and women, is now largely relegated to the public sphere where women cannot compete. For women, household tasks bestowed status in the domestic arena and the community, giving them power to control their environment. As the public sphere became more "important" in Rio Hondo, due to the money and prestige acquired through cane growing, it began to dwarf the domestic sphere. The women were left with domestic activities of devalued social status and responsibility.[15]

To counteract this powerlessness women have developed new strategies aimed at controlling their lives and the lives of their children within new limitations. Basically three types of strategies seem significant. First is the direct control of children. Second there is the control of men through sex and children. And third, there is the developing limited entreprenuerial activity with the village.

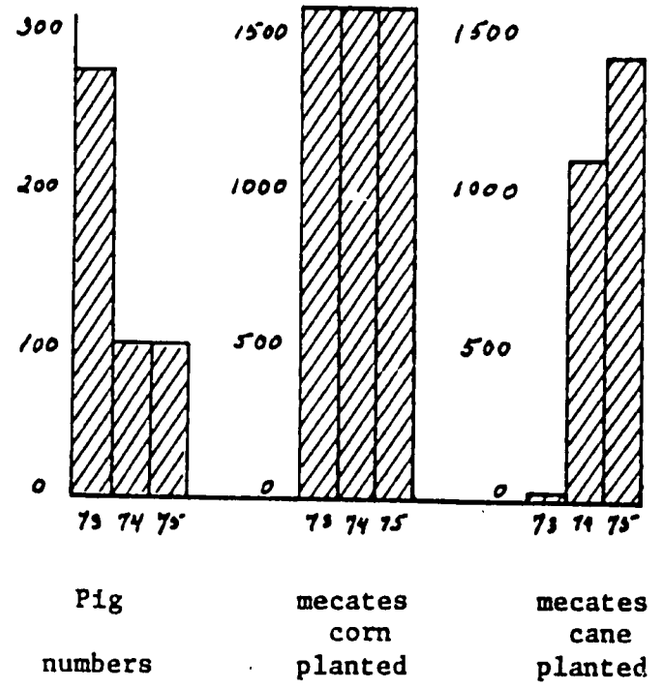


Figure 1: Comparison of pig numbers, mecates corn planted and mecates cane planted (1 mecate=1/8 acre) for 28 families in Rio Hondo representing all the families who had pigs in 1973.

The manipulation of children is one effective way to acquire material goods and money. Mothers weave their children to themselves with threads of guilt which in later life they manipulate. When they grow[16] up the children continue to provide for their mothers. This is particularly evident in the desire to send a child to the United States. It is estimated that 30,000 Belizeans work in the U.S. and send remittances

valued at about US $10 million each year. Many of these are supporting mothers while barely making a decent living themselves.[5]

The control of males directly through sex and children, long a female ploy, has become exaggerated as a direct adaptation to the recent cultural changes which men have undergone. Only a few men can make it big in sugarcane and afford tractors or cars, but the rest are left with their declining milpas to struggle against the changing times. This has been a cause of frustration in males which is vented in increased alcohol consumption and subordination of women. Men need to make a woman pregnant as a triumph of production and a sign of sexual prowess and virility. Women take advantage of this male need to give them babies.[17] As long as she has his babies he will support her and the children and perhaps she can even entice "goodies" from him which she cannot afford to buy herself. The more children they have, the more they can claim from the man. In fact, whether statistically significant or not, it was documented that women are actually trying to have more children while they are young. They have reduced the lactation period fairly consciously, and relaxed many of the traditional methods of contraception. In a situation of short food supply, this is obviously misplaced energy but it is a strategy in response to their resource loss on another front.[18]

Our own data shows that this new emphasis on childbearing, although a functional social strategy may, in the long run, be biologically maladaptive. In a sample of 29 women in Rio Hondo who had finished childbearing, 21 had reached menopause, 2 had tuboligation (one had numerous children and had lost none due to good care, the other had an educated husband and wanted to educate her children well), and 6 had had died in their childbearing years. This sample of 29 women had a total of 244 pregnancies out of which only 220 were live births. This results in a live birth rate of 7.6 per woman. Of the 220 live births, 23 children did not live to the age of three, which is equivalent to a mortality rate of 110/1000. Calculating the lost human energy, we find that a woman spends at least 2.25 years of her life carrying and nurturing children who either miscarry or die before the age of three. Beyond this there is the energy cost of recuperation after the birth of a child, although it is only possible to calculate the economic costs, the actual cost in human anguish cannot be estimated. The expenditure of energy in this manner may actually reduce the available female energy for food production and other activities.

A third strategy, a very recent one for several women, has been to start small-scale entreprenuerial activities. Three such women have opened small shops in Rio Hondo. One woman now sells eggs and live chickens purchased from a Mennonite "factory." She sells the meat in small quantities much in the fashion pork is usually sold. Another woman sells soft drinks from an ice cooler. Another buys beans, flour, and other staples in bulk and resells them in small quantities in the village. Each of these women is dependent upon a cane farmer husband, brother, or son, who helps her with her business, indicating that this particular avenue is not open to many women in the village.

VI. Child Malnutrition

In spite of economic activity, greater spending on food, higher income, higher GDP, child nutrition still remains marginally low, indicating stress in the system. Since the nutritional status of a community is the result of the interaction of a number of cultural, biological, and economic factors, and since it can be quantified, it serves as a good measure of social progress. A nutrition survey was carried out in Rio Hondo in 1973 and repeated in 1974 on a sample of 59 individuals in eight households, the same individuals being surveyed both years. During the survey all food consumed by each member of the household was weighed and portions of each food item consumed were calculated. This sample was small but the detail provides a good analysis of intra-family consumption patterns.[19]

From this study several conclusions can be drawn. First, in all the families the smallest children ate the least well, and no children[20] in the sample ate very well. Table II shows the total sample by age groups giving the number of individuals in each group. Second, there was no drastic improvement from 1973 to 1974. Third, the stress was greatest on calories in spite of the fact that average total RDA for calories for the whole sample went up from 94% to 99%, the child's portion looks small, particularly when compared with the fact that all the adult males reached 100% RDA or more. The adult average, however,[21] was offset by the fact that the women were affected by our presence in their kitchens and reduced their consumption considerably.

In our sample two families had fairly large quantities of sugarcane and incomes over US $5,000 that year. Two others were female-headed households. One of these women received money from adult sons in the nearby town and a daughter who was working in the U.S. The other woman, a recent widow, received assistance from her sister whose husband was a successful cane farmer. Among the other four families, one was traditional and the man farmed, the woman earned a little money washing clothes and doing other jobs when available. They had a very small income, but managed to care well for their children, who, although very thin, all seemed alert and intelligent and fairly well fed. One other family had an unsuccessful male but the woman was diligent and managed her very small resources rather well. The two remaining families were poorly organized, slovenly and very poor. However, in one, the traditionally oriented parents raised well-fed intelligent children, many of whom were extremely perceptive successful people. The other also was very poor but raised children who were slow, had numerous physical ailments, beat each other, and were unquestionably underdeveloped. In all cases, rich as well as poor, women struggled against the dominating wishes of men. In the female-headed households, the women felt their lives were much better. In fact, neither of these women wanted to live with a man again despite the fact that at least one had several suitors. The children of the rich did not fare better nutritionally than the children of the poor, indicating a link between the status, automony, and well-being of the women to the child's nutritional condition.

TABLE II

Summary of the nutrition survey results for calories and protein. Percent of children in the samples who reached 95% satisfaction of the RDA (recommended daily requirement as defined for Maya population).

AGE GROUPS	Number of Indiv.	95%RDA 1973	CALORIES 1974	95% RDA 1973	PROTEIN 1974
0 - 3 years	(11)	27	36	82	64
4 - 11	(22)	41	55	64	86
12 - 16	(10)	40	30	50	40
Over 17	(16)	69	75	63	75

In all cases the men ate well. If food was limited that day, the children and the mother went without, the man still got his share. The women and children are no longer as significant in the social sense as they were before. The male's status comes from his activities in the public sphere, playing with trucks and tractors, away from home, and not from raising his children with the woman. In the richer families there[15] is a deemphasis of the child's role. In the poorer families, which make up the majority of the 42 households, the average income did not rise substantially, thereby increasing stress and frustration as men could not reach desired prestige goals. In response, they began to drink much more.[22]

In early 1977 the local "cantina" (bar) was selling 48 fifths of rum a week and 14 cases of beer to service a population of approximately 60 men and youths of whom perhaps 20 were regular and occasionally heavy drinkers. In 1973, there was no beer in Rio Hondo and only half as much rum was consumed. Of course much of the heavy drinking was and still is carried out in the local town, so this figure represents only a portion, and probably a smaller one at that, of all the consumption. For example, one male, aged 68, who was included in our nutrition survey, had consumed a fifth of rum in town during the morning of the survey. He did this regularly at least once or twice a week. Meanwhile his children were poorly fed and cared for.

The nutritional status of the children reflects the powerlessness of women with respect to the acquisition of desired foods. The traditional foods, at the same time, still available in limited quantities and potentially available in greater quantities are not perceived as resources because they are "inferior." What mother wishes to feed her child a food she knows is inferior?

VII. At What Cost?

What has been the cost of this type of uneven "development?" We feel three groups in the village have lost more than they gained. The first group to lose were the women, by far the largest portion of the adult population. The second group were the children. While demands upon children have increased, little extra has been invested in the child to help her or him meet those demands. Third, there is the conservative farmer who did not wish to enter the sugarcane rat race or who had not enough money or land to do so in the beginning.

Perhaps one of the greatest costs has been a social one which has made it difficult for the village to take concerted action as a community[23] vis-a-vis the nation. The villagers never really contributed to national policy before in any active way, they merely responded to that which happened around them. This is not to say that they were passive actors for, at times, they have taken aggressive concerted action as, for example, when village land was threatened. Yet, their long history of[24] contact with the colonial government and its constant manipulation of their society has left them with a feeling of powerlessness. Actually they are not completely powerless. On the contrary, the national government has a history of responding favorably to village demands in recent years. Yet the alternatives which are open to them are generated outside the community and they realize this full well. Further, the desire for profit has split the society into groups of those who benefit from change, who tend to acquire power, and those who do not. These compete with each other. This has made concerted group action impossible as the needs and desires of each group are contradictory. Thus, in recent years in Rio Hondo, the emphasis has been on individual competition among men and there is no vision of the village as a whole uniting for progress. As they themselves so aptly put it, "We do not pull together. There is too much egoismo these days." Egoismo is a kind of jealousy which they define themselves to be a concept of limited good. "When someone else is gaining, you will cease to help him because he will probably take advantage of you just to get ahead. It is too bad we are this way as it means the village cannot progress."

This competition will make people jump onto new bandwagons as the old ones wear out. This is perhaps what has happened more recently as sugarcane prices fell. Cane farmers with money wanted to diversify so they started to buy cattle. In early 1977 three farmers owned 12 head.

The increased male competition coupled with increased frustration and the decline of the milpa have taken a toll on the lives of women and children who have become the powerless of the powerless.

VIII. The Village and the Larger Society - or - Who Gains?

Obviously if profit is made someone must gain. Who gains by this type of "development?" On the village level, the few entreprenuerial

farmers have gained. They have food, money, freedom, drink, dances, women, and other things that have come to mean "the good life." They have machinery and, therefore, status. They have purchased land. They control women, and they have children. For the merchants in the towns, business is booming. They sell more cokes, more cans, more beer, more wheat flour, dinette sets, furniture, trucks, car parts, etc. One step further away is the trader who imports and exports and the larger producer who makes enough to make export worthwhile and have the money and power to maintain national policy in their favor.

At the same time as Belize exported sugarcane, it imported 16 million lbs. of cereals which could have been produced locally on the same land. While it exported 1.5 million lbs. of fish and marine products, it imported 1.9 million lbs. canned meats and fish. While it exported 4 million lbs. of fruit, it imported 5 million lbs. of fruits and vege-[14] tables. The argument often heard is that the need for foreign exchange must be balanced against the domestic needs. In actual fact, sugarcane has had very little effect upon foreign exchange. What it has really done is increase the national trade deficit. It has contributed only 5% of the gross income of farmers to the state but has created a tremendous desire and perceived need for machinery and trucks which[25] can only be assuaged by imports. Between 1973 and 1975 imports of machinery and vehicles increased by 73% and imports of fuel, lubricants, and chemicals increased by 108%. In 1975 the total value of machinery and fuel imported largely for sugarcane production in the north was US $39.4 million. The total value of the sugar exported at peak price was US $41.4. Sugar, instead of creating demand for social services, has created a demand for male status toys. Further, while the GDP went from US $536 million in 1973 to US $1,200 million in 1976, the balance of trade between 1973 and 1975 deteriorated by[5] -481% from US $-18.1 million to US $-30.7 million. What, after all, could be a higher priority than the domestic need for affordable food?

The irony of all this is that Belize has over 4,000 square miles of good arable land and a population of at least 70,000 agrarian people who prefer to grow food crops, who like the agrarian life, and who could easily produce enough for themselves and the urban 70,000 inhabitants without altering their basic technology. They could produce enough beans, corn, rice, cassava, vegetables, and fruits not only to feed the country, but with a very little bit of technological assistance with adequate incentives, policy support from decision-makers, and[26] adequate land, also for export as well. They could easily produce enough pigs and chickens to feed the country if the price for meat was fair, if corn production was adequate, if women still had some control over production, and if they did not have to compete with the higher status imports. The poor, the majority of the populace, cannot afford the luxury of buying imported items in quantities which will give them enough of their daily nutrients in the proper quantities. So if the people are to be fed and a healthy society is to be developed, new strategies, based upon internal strengths, needs to be generated.[27]

IX. What Can Be Done

Various steps can be taken to remedy this situation, but they must be taken on different levels. On the national level, economic and social policy needs to be developed which will eliminate the type of competition in the villages as well as in the country whereby the few gain but at the cost of social progress. Belizean leaders have long been aware of these problems, and in fact, in March 1977 initiated a policy-planning[28] effort aimed at the elimination of poverty and malnutrition. Also four years ago the ministry of agriculture initiated experimental agronomic research on intensification of milpa to provide economic incentive in[29] food production. More recently, the government has initiated a pig development scheme intended to provide food and income for rural sectors, particularly women, whilst supplying meat to the urban dweller at an affordable price. There is a growing realization that the production alternatives have to be generated by Belizeans in line with priorities which will bring about true development. There also has to be a renewed respect for local foods, techniques, and knowledge and a rejection of the foreign goods which compete with local production possibilities.

With the help of a strong social policy, at the local level, women need to be offered opportunities to participate in the economic system which they themselves help design in a manner consistent with custom. Rural women have shown their ability to take initiative by developing entreprenuerial activities when the opportunity arose. If provided with incentives, they will plunge into the business of production and it is our guess that they will also actively enter the decision-making area.

As to outsiders like ourselves, we can only respond to requests for assistance. But we must be able to respond with sensitivity to the female requests which are not always aggressive enough to compete either with male requests or with those of the rich. Therefore, we suggest, that women in developed countries should be in positions of power, where they can listen, learn, and respond to the softly-spoken needs[30] of women in underdeveloped countries. Further, women in the developed countries should also be properly educated so that they can provide technical assistance, and, more importantly, so that they can sort out and evaluate the requests for assistance selecting those which really represent true needs and offer good solutions. Only pulling together can we turn Profit into Progress.

X. Bibliography and References

1. The authors wish to acknowledge the Wenner-Gren Foundation for Anthropological Research, Inc. (Grant No. 3017), which funded the largest portion of the field work for this project. Support was also received from the MacMillan Fund (University of Minnesota), the Honors Program (University of Minnesota), and Dr. David Gilbertson of St. Paul, Minnesota. The nutrition data was collected jointly with Dr. Claire Cassidy (presently of the Smithsonian Institution) who was funded by the University of Minnesota Graduate School.

X. Bibliography and References

1. The authors wish to acknowledge the Wenner-Gren Foundation for Anthropological Research, Inc. (Grant No. 3017), which funded the largest portion of the field work for this project. Support was also received from the McMillan Fund and Honors Program (University of Minnesota), and Dr. David Gilbertson of St. Paul, Minnesota. The nutrition data was collected jointly with Dr. Claire Cassidy (presently with the Smithsonian Institution) who was funded by the University of Minnesota Graduate School.

2. United Nations Development Programme, Guidelines on the Integration of Women in Development. Program Policy and Evaluation Division. Headquarters, N.Y., Mimeograph G 3100-1, 25 February 1977; Ester Boserup, Women's Role in Economic Development, N. Y., St. Martins Press, 1970.

3. For detailed descriptions on natural environment and land use by different populations in Belize see A.C.S. Wright et al., Land Use in British Honduras, Colonial Research Pub. no. 24, 1959; R. N. Jenkin et al., The Agricultural Development Potential of the Belize Valley, Land Resource Study 24, Land Resources Division, Ministry of Overseas Development, Surrey, England KT67DY, 1976.

4. Throughout the paper, data not referenced was collected by the authors in the field during two years of field work carried out between May 1973 and April 1977.

5. United States Foreign Service, Foreign Economic Trends and Their Implications for the United States. Belize. U.S. Dept. of Commerce, Annual Reports 1976 and 1977.

6. Mary Pohl, Hunting in the Maya Village of San Antonio Rio Hondo, Orange Walk District, Belize. Journal of Belizean Affairs. Special Issue, Sept. 1977; Charles Wisdom, The Chorti Indians of Guatemala, University of Chicago Press 1940; Alfonso Villa Rojas, The Maya of Yucatan, in the Handbook of Middle American Indians, Vol 7, part 1, pp. 244-275, R. Wauchope, ed., 1969; Angel Palerm, Agricultural Systems and Food Patterns, in Handbook of Middle American Indians Vol 6, ibid., 1967.

7. Edgar Anderson, Plants, Man and Life, University of Cal. Press, Berkeley, 1969; Robert Wauchope, Modern Maya Houses; A Study of their Archaeological Significance. Carnegie Institution of Washington, Pub. 502, 1938; Olga Stavrakis, Ancient Maya Agriculture and Future Development, Culture and Agriculture, Bulletin of the Anthropological Study Group on Agrarian Systems, Am. Anthropological Association, No. 5, 1978.

8. Marion Marshall, A Pig is a Gold Tooth, Summa Thesis, University of Minnesota, College of Liberal Arts, Dept. of Anthropology, Minneapolis, 1976.

9. William E. Carter, New Lands and Old Traditions: Kekchi Cultivators in the Guatemalan Lowlands, Lat. Am. Monog. Center for Latin American Studies, University of Florida, Gainesville, 1969; Ruben Reina, Milpas and Milperos. American Anthropologist, Vol. 69 pp. 1-20, 1967; Michael Nelson, The Development of Tropical Lands, Johns Hopkins University Press, Baltimore, 1973.

10. D. E. Dumond, Swidden Agriculture and the Rise of Maya Civilization, Southwestern Journal of Anthropology, Vol. 17, pp. 301-313, 1961; Dumond discusses the productivity under different forms of swidden in the Maya Lowlands and suggests that it could have been productive enough to support very dense interior populations and even civilization in the Yucatan Peninsula.

11. Irene Tinker, Development and the Disintegration of the Family, Le Carnets de l'enfance, UNICEF, Vol 36, pp. 29-37; see also Boserup, op cit. (2).

12. Leith Mullings, Women and Economic Change in Africa, in Women in Africa, Hafkin and Bay, eds. Stanford University Press, Stanford, Cal., 1976; Michelle Zimbalist Rosaldo, Women, Culture and Society: A Theoretical Overview, in Women, Culture, and Society, Rosaldo and Lamphere, Eds. Stanford University Press, Stanford, Cal., 1974; Karen Sacks Engels Revisited: Women, the Organization of Production and Private Property, in Woman, Culture and Society, ibid.

13. See Ruben Reina, Milpas and Milperos, op cit (9).

14. Ministry of Finance and Economic Planning, Economic Survey - Belize, Central Planning Unit, Government of Belize, 1974.

15. Rosaldo, op cit (12).

16. Margery Wolf, Chinese Women: Old Skills in a New Context, in Women, Culture and Society, op cit (12).

17. This is not meant to imply that women want more children but that they utilize this as a strategy.

18. The relaxation of traditional methods of contraception, although not quite conscious, certainly does take place as traditional methods are "forgotton" or abandoned, many of which have been known to be very effective and have served as a basis for modern western contraceptives.

19. The nutrition survey was conducted by weighing food in each of eight households for one whole day and collecting eight days of recall data at the end of each day. Results show that although the days weighed produced precise quantified figures, the recalled days were a more accurate reflection of daily eating habits. Women tended to improve their diets on the days food was weighed. The

survey was carried out in July 1973 and repeated on the same sample (59 individuals) in July 1974.

20. Marina Flores, Institute de Nutricion de Centro America y Panama (INCAP), Guatemala, personal communication. She stated that this was a common pattern in most of rural Central America.

21. RDA = Recommended Daily Requirement as calculated by INCAP for Maya populations.

22. A number of studies suggest that alcohol consumption increases with cultural change and transition to western types of life. For example, see T. D. Graves, Acculturation, Access, and Alcohol in a Tri-ethnic Community, American Anthropologist Vol 69, pp 306-321, 1967; M.C. Robbins and R. B. Pollnac, Drinking Patterns and Acculturation in Rural Buganda, American Anthropologist Vol 71, pp. 276-284, 1969.

23. Alberto Navarette, Chief Agricultural Officer, Belize Ministry of Agriculture, personal communication; Clarence Borland, Central Planning Unit, Ministry of Finance and Planning, Belize, personal communication.

24. O. Nigel Bolland, The Maya and the Colonization of Belize in the Nineteenth Century, in Anthropology and History in Yucatan, Grant D. Jones, ed., University of Texas Press, 1977; D. E. Dumond, Independent Maya of the Late Nineteenth Century: Chiefdoms and Power Politics, in Anthropology and History in Yucatan, ibid.

25. A 5% tax was levied on sugarcane sold to the factory.

26. William C. Thiesenhusen, Population Growth and Agriculture. Paper delivered at the seminar on "Population Growth and Program Change." International Union for the Scientific Study of Population, Liége, Belgium, held at Colegio de Mexico, Mexico, D.F. December 15-17, 1975; Thomas Marchione Food and Nutrition in Self-Reliant National Development: Impact on Child Nutrition of Jamaican Government Policy, Medical Anthropology Vol 1, pp. 57-78, 1977. Both these papers suggest that various kinds of policy can affect productivity of food and, hence, nutrition.

27. J. M. Acheson, Limited Good or Limited Goods? Response to Economic Opportunity in a Tarascan Pueblo. American Anthropologist Vol 74, pp. 1152-1169, 1972.

28. The Ministry of Health and Home Affairs, Belize, with the assistance of the Caribbean Food and Nutrition Institute, Jamaica, prepared a discussion draft for a food and Nutrition Policy for Belize in March 1977 to which the authors contributed data. This draft was used to design a basic policy which, at our last visit, was still classified.

45

29. Dr. Jerry Cal, Chief Agronomist, Ministry of Agriculture, Belize, carried out experiments on intensive milpa production with favorable results. The results of his research are in mimeograph form, available from the Ministry of Agriculture, Belmopan, Belize.

30. James L. Brain, Less than Second-Class: Women in Rural Settlement Schemes in Tanzania, in Women in Africa, op cit (12). This study shows how major problems and project failures might have been avoided had the designers been more keenly aware of the activities, needs, and customs of women project participants.

SEX ROLES IN FOOD PRODUCTION AND DISTRIBUTION SYSTEMS IN THE SAHEL

Kathleen Cloud

I. Overview of the Sahel

The Sahel as a geographic region first entered the consciousness of Americans during the disasterous drought of the early 1970's. The drought focused world attention on the area and prompted massive international relief efforts. As the drought abated, consensus grew that to prevent such massive human suffering from recurring, a large-scale, long-term international development effort for the Sahel was necessary. Such an effort is now underway, with participation by UN agencies, the World Bank, the European Development Fund, many individual nations including the United States and the African Nations themselves.

Massive international development efforts will continue to be focused in this area over the next decades. Knowledge of current food production and distribution systems is essential so that improvements to these systems can be made in rational and integrated ways. Various studies of Sahelian food systems have been done, but they have tended to overlook sex role differences in responsibility for food production, food processing and food distribution.

This case study will make a first attempt to identify the roles and responsibilities of women within Sahelian food production and distribution systems. When their role is more clearly understood, it should be possible to plan more effectively.

A discussion of food production in the Sahel must start with a description of the natural environment. The Sahel is a band of land about 200 miles wide, extending across Africa from the Atlantic 2,600 miles inland, and including much of Senegal, Mali, Niger, Upper Volta, Mauritania and Chad. It is bounded on the north by the Sahara, on the South by a tropical area of endemic disease. There is one rainy season a year in the summer months. The amount of rainfall decreases as one moves north. Two eco-climatic zones are described in the AID Development Assistance Program (DAP) for the regions:

> The Sudan zone, with 20-40 inches of rain, can support relatively intensive systems of agriculture. Health conditions

47

are favorable here in comparison with the Guinea zone to the south. Over most of the Sudan zone, millet, sorghum and cowpeas are the principal food crops, and cotton and groundnuts the cash crops. The possibilities for further diversification into crops such as maize and soybeans are substantial and, as pasture growth is better than in the sahel, mixed farming is possible and in some areas is being developed. A feature of the cultivated areas of the Sudan zone is the type of parkland where scattered mature trees of economic value, e.g., the shea butter tree, which produces a cocoa substitute, stand in cultivated fields.

The Sahel (an Arabic word meaning "border" or "shore") receives 10–20 inches of rain annually. A vast area encompassing some two million square miles (two-thirds of the area of the U.S.) extending 2,600 square miles between latitudes 10-20 degrees north, the Sahel is typically an acacia-dominated tree and shrub savannah. Crop production is possible in the Sahel: millet is grown under as little as 5 inches of rainfall, and groundnuts under as little as 16 inches. Not surprisingly, under such conditions, yields can be good but they are unpredictable. Pastoral operations are the zone's most important economic activity, and under more or less normal conditions nomadic pastoralists in the zone maintain an estimated 19 million cattle, 29 million sheep and goats, and 3.3 million camels, horses and donkeys. For the nomadic grazers, the Sahel represents a base which provides adequate forage for their herds during four to five months of the year; thereafter, the herds move southwards to graze in areas which, while better watered, present disease hazards in the wet season. A substantial number of breeding females and young stock, however, remain in the Sahel in a normal dry season.

To quote further from the DAP;

This region is one of the poorest on earth. Some 90 percent of the population lives in rural areas, where subsistence agriculture predominates. Few roads are paved, many areas are difficult to reach and some are inaccessible. In addition, the meager capital wealth is concentrated in the hands of a few. Illiteracy rates average 85-90 percent. While the United States is dissatisfied with an infant mortality rate of less than 20 per thousand, countries of this region have rates which vary between 100-200 per thousand. In some countries only one-half of the children born alive can be expected to live beyond the age of five years. Nonetheless, the current growth rate of population is estimated to be 2.2-2.5 percent per annum.

The social systems of the Sahel have adapted to seasonal, and yearly, as well as cyclic variations in rainfall in a variety of ways that permit considerable expansion and contraction of food production systems. Nomads travel north to graze on open range when the rainy season produces grasses. They return to the wetter south when the harvest is over to

graze their cattle on the farm stubble. Farmers plant more and weed more when grain reserves are low. Young men go to work in the coastal cities when times are hard, taking whatever work they can get. Pastoral families usually have a family branch in the richer, moister south who can manage family trade and absorb some family members in the bad times.

In the really desperate times of drought, whole herds of cattle were driven far south into the tropical elephant game reserves of Nigeria. They were kept there illegally and at risk of sleeping sickness in a gamble to save some of the herd. This desperate measure must have evolved as a strategy long before there were governments and borders with which to deal in the area.

Sahelian societies tend to be conservative and vest authority in older members. Oral cultures have to depend on human memory for successful strategies in problem solving. When times are good, the young may assume it will always be that way. The older people remember the bad times; how to prepare for them and how to survive them. The span between major droughts in the regions may be 40 to 60 years. In the droughts, the margin for mistake is very small, especially for the Nomads. The advice of the old, who have survived previous droughts, is crucial. Food production systems change slowly in the Sahel for good reason. There is a very delicate balance between people and their environment which rests on the experimental wisdom of centuries.

II. Food Consumption Patterns

Many people in the region are hungry at least part of the time. The degree of hunger depends to a large extent on the presence or absence of rainfall. There are seasonal variations in hunger; food is shortest just as the rainfall begins, when the previous year's crops are most depleted and animals are producing little milk. In a nutritional survey in Senegal, people weighed least just before the first rainfall. Some years are worse than others. If the rains don't come at the right time, or miss certain areas, many people are hungrier that year.

Figures 1 and 2 show this seasonal variation in both food intake over the course of the year in two different areas of the Sahel. Both samples were done before the drought, in relatively good years.

SEASONAL VARIABILITY OF FOOD CONSUMPTION

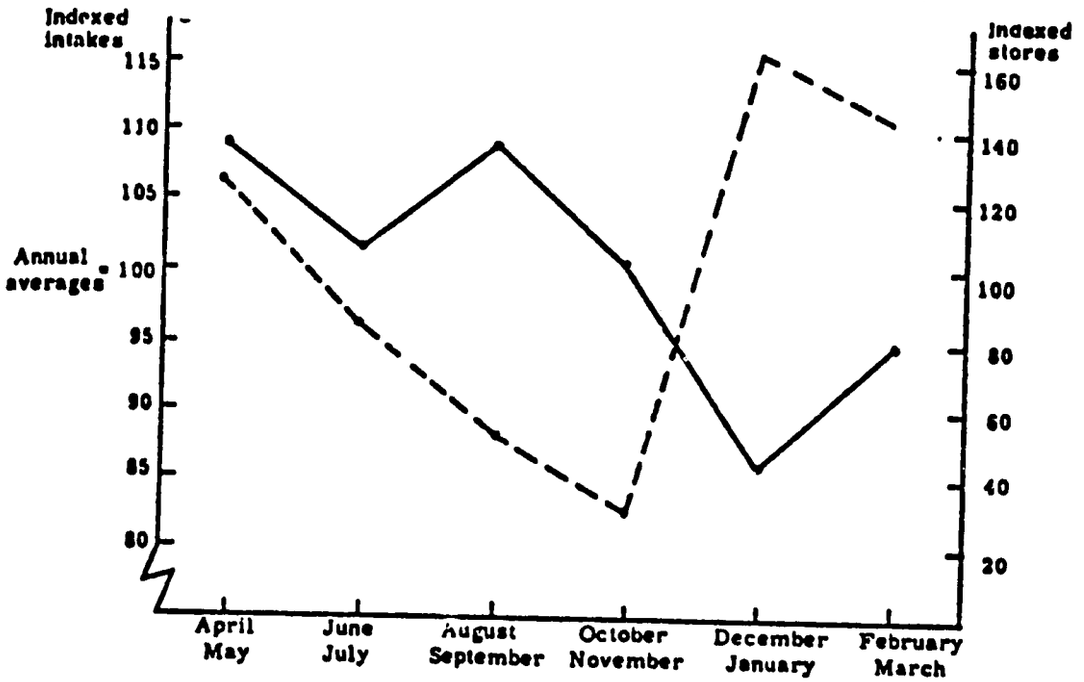
SOUTH CHAD, 1965

	Grams per capita per day			
	3/15-6/15 Hot - Dry	6/15-9/15 Heavy ag. labor	9/15-12/15 Harvest	12/15-3/15 Cool
Cereals	441	371	332	472
Tubers	36	64	136	105
Oils	48	64	172	61
Starches	70	75	112	50
Legumes	18	103	175	31
Calorie Equivalent	2,295	2,196	2,841	2,493

Source: SEDES quoted in Intech, Inc. Nutrition Strategy in the Sahel, Final Report.

FIGURE 1

SEASONAL VARIANCE OF CALORIE INTAKE IN RELATION TO STOCKS OF STAPLE GRAIN (GUINEACORN OR SORGHUM)



Seasons are defined as bimonthly periods which roughly correspond to the farming calendar.

April/May:	Period of planting of millet, land preparation, and beginning of rains.
June/July:	"Labor bottleneck' period of ridging, weeding, more planting. Women gather wild fruits.
August/September:	Beginning of millet harvest in early August, continuation of weeding tasks and rains.
October/November:	Beginning of harvests of groundnuts, rice, peppers, and other vegetable crops, end of rains.
December/January:	Guineacorn, cotton, sweet potatoes, and sugar-cane harvests.
February/March:	Essentially non-farming months.

Village data have not been adjusted for the small sample sizes; all villages are combined without weighting, The index number 100 is taken as the level of average annual intakes and storage.

Solid line: Calorie intake Dotted line: Stocks of grain

Source: Simons, Emily, "Calorie and Protein Intakes in Three Villages of Zaria Province," May 1970-July 1971. Samari Miscellaneous Papers (Nigeria) 55 (1976) p. 25, Fig. 1

FIGURE 2

Firm qualified data on the relative amounts of food consumed by men, women, boys and girls are very scarce. An Economic Commission for Africa (ECA) document gives a descriptive account of food consumption patterns. "Unfortunately, in many areas, men of the household get the lion's share of available food and in particular the soups, stews and relishes (which women produce--ed.). In some African cultures, it is still considered ill mannered for a woman to eat much of the more nutritious foods, in spite of her higher physiological needs. Within households, women are likely to consume a lower proportion of their requirements than men, not to mention children, girls as opposed to boys." (ECA/FAO Women's Unit, 1974).

III. Sahelian Food Production Systems

Most food production and distribution is still in the framework of a traditional subsistence economy. People raise much of what they eat; social obligations and barter provide much of the rest. "In a subsistence economy the result of work is not intended for exchange, but for consumption by the worker or his immediate companions, and the work, of course, is not remunerated. In a money economy, the results of labor are intended for exchange. The work and its wage allow the worker to participate in the mainstream of economic activity. Someone who has nothing to exchange is excluded from the mainstream." (Housbaum, 1964).

In the Sahel, the amount is small compared to other parts of the world, but some surplus farm production moves into the monetized sector of the economy, either through the open markets or through government purchasing agencies. Men's work and women's work have different levels of access to the money economy; this fact, which has enormous practical ramifications for development planning, will be discussed more fully later in the paper.

First, I would like to describe, in broad outline, the Sahelian food production systems themselves. For simplicity's sake, I will talk about two major types of food production systems, Sedentary farmers, and Pastoralists. These two groups exist in overlapping territory and have symbiotic relationships. There are literally hundreds of variations in each pattern; no group displays all of the characteristics of the type, but a general description does serve to give a general picture. In planning specific projects, it is, of course, important to investigate the specific sex role responsibilities of the groups involved in that project.

Sedentary farmers live in small extended family villages in the moister areas of the Sahel. Many families are polygamous. They practice slash and burn hoe agriculture that makes good use of their scarest commodity: labor. Lands are held in common with some combination of inherited usufruct rights, available labor, and need determining land assignment. There are five main areas of food production among sedentary farmers: (1) grain production, (2) vegetable gardening,

(3) gathering of wild plants, (4) hunting and (5) small animal production. I will take each area in turn and describe sex roles for that product.

IV. Sex Roles in Food Production Among Sedentary Farmers

A. Grain Production. The grain is usually millet or sorghum. These are most often seen as men's crops, and the husband or a group of brothers will control the field and its product. The division of labor is often as follows:

1. Clearing the land is done by boys and young men during the dry season. Trees and large plants are cut down and the areas is burned to prepare for planting. Trees with some use (fruit, shade, fodder) are left.

2. In planting, men make holes, women plant seed--often women are responsible for selection of seed from previous harvests to be used. Because of erratic rainfall, they will sometimes plant 4 or 5 types of seeds with varying moisture requirements in the same plot.

3. Weeding. This is the most labor-demanding part of the grain farming, and in most instances every available hand will be used in hoeing weeds. Young men come home from the city to help during this period. Wives will take turns staying home to cook and care for the children while the others go to the fields for the day. A man with several wives and many children has a distinct advantage in agriculture because of the labor he can call upon during the weeding and the harvest. The crops may be weeded one, two or three times. The amount of weeding has an effect on the amount of grain harvested. There is some indication that when grain reserves are high, less weeding is done--there is not the urgent need for grain.

4. Harvesting. Again, every available person will tend to be used.

5. Storage. Generally, men are responsible for building the family storage sheds and supervising the grain stored in them. Women are responsible for the household storage of the grain.

6. Threshing. This is the women's job, and it will be done just before pounding the grain into flour each day. This threshing and milling may take a woman 2 or 3 hours, and is one of the most arduous, time-consuming tasks she has to perform.

There are some exceptions to the pattern of male dominance in grain production. In addition to assisting in their husband's millet field, women from some groups will have their own grain fields where they and their children do all the work. Notable among these are some of the Hausa women. In Mali, women grow corn in fairly large quantities and in some areas swamp rice is grown by women.

B. Vegetables Gardens. Women in most sedentary farm groups have hut gardens where they grow vegetables for the sauces eaten with the millet as well as for trade. They may grow carrots, red peppers, onions, garlic, tomatoes, eggplant, gumbo and various kinds of beans. It is these sauces that provide the necessary additional amino acids to the millet to make a complete protein chain. In addition, they provide many necessary vitamins, minerals and fats to the diet while also providing variety in flavor and appearance.

Near urban areas, where there is a cash market for vegetables, they may be grown by men, often with the help of the whole family.

C. Gathering of wild plants and fruits is done almost exclusively by women. In many groups, the gathering of wild foods provides a significant addition to food supplies. This is especially true at the beginning of the rainy season. Wild leaves, grass seeds, and fruit provide a supplement to low food stocks. Wild grass seeds are pounded together with millet to add flavor to porridge. Wild leaves are added to the sauces and some of them find their way into the markets, entering the cash economy. Baobob leaves in particular have a strong market value, providing cash income for women. Some of these leaves have a surprisingly high protein content as well as furnishing vitamins and minerals.

"The importance of gathering wild foods increases manyfold during years of crop failure. This is very important. Wild foods in time of stress provide a most vital reserve. Again, you have the flexibility of systems; if all goes well, people prefer a subsistence farming approach; but if the rains don't come the way they should, the system falls back into its original pattern: hunting/gathering. This, of course, is possible only if some of the traditional bush is available. Projects which eliminate "useless bush" on a grand scale can have terrible effects in that they eliminate the fall-back reserve of the people. All too often visitors see the bush as useless, but in reality there is scarcely a plant that is not used for feeding people or keeping them well." (Weber, 1978).

Fruit is eaten enthusiastically when it is available. One thing that makes it especially popular is that much of it ripens before the new crops, at a time when food supplies are low. A second is that it requires no preparation, it can simply be picked and eaten. However, quantities of fruit are often wasted that with simple drying frames could be preserved into the dry season. Several consultants have suggested introduction of orchards into parts of the Sahel, and in fact, among the Mossi, people do plant fruit trees as a kind of old age insurance "giving people an expectation of minimal income with little expenditure of effort." (Luhac, 1970).

One wild crop of considerable economic importance is the Kerite nut. It is harvested in the summer and buried in pits--later in the

fall it is roasted and pounded by groups of women to extract its oil. The Kerite oil, or Shea butter, is then mixed with dough, rolled in leaves, and packed in jars. These balls of oil and dough are either sold in local markets for use in sauces or purchased by wholesalers (men) who refine the oil and export it. In some West African countries it's one of the largest agricultural exports. (Bingham, 1976).

D. Hunting and fishing. Hunting was at one time a more important food source than it is now; it was one of men's major food producing activities. Big game is gone and smaller game is much scarcer since large areas have become deforested. Game birds, snakes and animals still provide some protein in Sahelian diets. In many areas, there is a taboo against women and children eating birds, eggs, or snakes, so the protein goes to the hunters. Termites and locusts swarm during the rainy season, and children have feasts on them, roasting them over an open fire. Fishing occurs in rivers, streams and mares. In some areas it is a major source of protein.

E. Small animal production. Women are primarily responsible for small animals--goats, chickens, sometimes sheep and pigs. They are not raised primarily for meat, but "to make more." Chickens and young animals are kept in the compound. The older animals may be herded by children or kept in corrals while crops are growing. In some places compost from goat droppings in the corral is used for fertilizer. With proper breeding procedures, goats are a reliable source of milk year around, providing cheese and milk sauce for millet porridge. They recover faster from drought and reproduce more quickly than larger animals. As a result, they have great value as a food source in difficult times. When their milk producing years are over, their meat finds its way into the sauce pot, often at feast times.

V. Food Distribution Practices Among Sedentary Farmers

In most farming groups husbands and wives have reciprocal obligations to provide one another and their children with certain things. There is rarely one household budget in the western sense. Often the husband is to provide grain as well as most meat and fish for the family. The wife is to provide the vegetables or milk sauce that accompanies the grain. She is responsible for preparing both the grain and the sauce for eating, as well as for brewing the beer used on social occasions.

In addition to her responsibilities for the provision of food, the wife is responsible for the health of the family, often paying for necessary medicines, Both husband and wife may be responsible for part of the clothing needs of the family. The man is responsible for the defense of

the family, although since colonial times this obligation has not been as important. The husband is generally responsible for house building. The wife, the husband, or both, may be responsible for children's school fees. If there are several wives, each uterine family of mother and children forms a somewhat separate economic unit. (Paula, 1976).

Under Moslem law the role obligations are somewhat different. The husband has an obligation to support his wives completely. This is an obligation which only the richer Sahelian Moslem families can accommodate.

In most households, more traditional African patterns prevail. In some polygamous households, each wife cooks each night for her husband; in others, the wives only cook when the husband is to spend the night with her. Denise Palme, in her introduction to Women in Tropical Africa, has this comment on the uses of this obligation.

> "The task of preparing the meals is not without its compensations. It provides women with a means of exerting pressure when necessary, as when a man is having an affair to which his wife wishes to raise objections. If he remains deaf to her first remarks, she resorts to a simple method for curing his faithlessness: one evening the husband will find no dinner waiting for him when he comes home. Aware of his guilt, he does not dare to protest and goes to bed with an empty stomach. The next morning he gets up, the same scene is repeated, without a word being said. The husband can do little about it, for if he starts shouting, his wife's complaints will raise all the women of the village against him."

As a general rule, men control the decision-making about the disposal of grain crops. Once their family and group obligations are met, they may store the grain or sell it as a cash crop. Women control decision-making about excess vegetables and legumes grown in their hut gardens, and wild plants such as Baobob and Kerite. They will often sell excess at the market. As a woman gets older and has more children to help her with gardening and gathering, she may have considerable excess for sale, and travel to fairly distant markets, becoming an "own account" trader of some substance. With technical assistance to such women, more fruits and vegetables could enter the money economy, bringing many women a small income. Already, men are moving into the production of vegetables as a cash crop in several areas where an urban market exists. Care needs to be taken that women are not squeezed out of vegetable production for the money economy.

Chickens may be given as gifts or used in ceremonial meals. In some cultures, women sell them in the markets for cash. Chickens and eggs may be eaten by the whole family or just by the men, depending on local taboos.

In fishing villages, women sometimes sell the fish they smoke, and in the coastal areas, some women are fish wholesalers, doing substantial

business. Unfortunately, they are gradually being squeezed out of the market as refrigerated warehouses and freezer plants are introduced.

Most of the crops grown specifically for cash (peanuts, cotton, gum arabic) are seen as men's crops, although women often contribute labor to them. They are grown in men's fields and the cash profit goes to men. It is used to pay taxes, to reinvest in farm inputs (fertilizer, better seed) or to purchase symbols of modernity such as radios. Seldom does the income find its way back into the family food budget.

There are, however, some interesting examples of women's cash cropping. In Upper Volta, the UNESCO project has introduced the growing of soybeans as a cash crop for communal women's groups. The proceeds of the sale are used for such things as buying medicine for the Village dispensary. A proposed AID project in the area will attempt to help women and women's groups develop cash crops in much the same manner.

VI. Sex Roles in Food Production Among Pastoralists

The second major food production system in the Sahel is that of the Pastoralists. They live in small, extended family groups, many of them polygamous. These nomadic and semi-nomadic pastoralists have developed movement strategies that permit them to make use of very dry areas for food production.

During the course of the year, animals and people may move considerable distances to take advantage of various food and water sources. Herds and people are combined and re-combined in various ways to produce the best conditions for food production with the least stress on animals, people, and environment. The major food production activities are: (1) stock-breeding and milk production, (2) gathering of wild plants, (3) hunting and (4) vegetable gardening and grain farming. Again, I will take each activity in turn and describe sex roles for that product.

A. Stockbreeding and milk production: Most pastoralists breed a wide variety of animals and maintain diversified herds as an adaption to the environment. Camels, cattle, sheep and goats each have characteristics that provide different benefits. Goats breed quickly and recover quickly from drought. They can exist on browse and when grasses are not available. Both their milk and their meat are palatable. Sheep give somewhat more milk and their meat is considered tastier, but they are more vulnerable to drought than goats, and herds take longer to reconstitute. Both sheep and goats stay fairly close to camp. They are herded by boys and girls and are milked by women.

Cattle can go further from water for pasturage than either sheep or goats, and when they are fresh, they give considerably more milk. Cattle are taken on long treks to the north during the rainy season

by boys and young men and return after harvest to graze on farmers' stubble or fallow fields. Cows with young calves are often left near the camp and milked by the women. Whether men or women milk cattle varies from group to group, but even when women don't do the milking, the milk is seen as belonging to them.

Camels have the largest grazing reach because they can go furthest from water. They reproduce slowly, but give high-quality milk for long periods. Males are castrated and used for transportation and trading; females are used for breeding and milk. Camels are the exclusive responsibility of men, even the milking. Not all pastoralists have camels; some prefer horses or donkeys for transportation.

B. Gathering of Wild Plants. Among pastoralists also, collecting is mainly the task of women, but boys may also participate. Among the Tuareg, more than 50 different plants are gathered: seed, leaves or fruit. As an example of the volume of this production, one Tuareg household gathered 1,000 kgs of wild iceben seeds in one season. They are pounded along with millet to give flavor to the porridge. The leaves are used in sauces, just as in farm families. Fresh fruit is consumed with enjoyment.

C. Hunting. Hunting of small game is still sometimes done by men, but here also it is not as important as it used to be because there is less game.

D. Vegetable Gardening and Grain Production. Some few Nomadic groups farm around oases in the northern Sahel. They use irrigation, raising water from shallow wells with a bucket and a pole or animal traction. They grow wheat and some barley in the winter, millet and sorghum in the summer. Tomatoes grow most of the year. Potatoes, sweet potatoes, onions, melons, dates and sometimes lemons, beans, saffron, red peppers, and mint are each grown in the same areas. Millet and sorghum are harvested by women, dates by men, other crops by both men and women.

VII. Food Distribution Practices Among Pastoralists

Among pastoralists also, husbands and wives have reciprocal obligations to provide one another and their children with certain goods and services. Again, there is not a common household budget in the western sense. In general, women are responsible for the provision of household goods, pots, chests, utensils, and for the processing and trading of milk and milk products. Men are responsible for the care and herding, as well as the actual selling of the large animals, although they may not be their owners.

The ownership and usufruct rights to nomadic animals is one of the murkiest areas of knowledge in development planning in the Sahel. The general assumption of development planners repeated to us all over the

Sahel was that men owned the cattle; women might own goats and sheep. However, an examination of the literature, including the AID-sponsored Rupp report shows this to be a misconception. Animals are owned by individuals, but herded as a group responsibility. According to Nicolaisen, among the Tuareg almost everyone is a stock owner. Even little boys and girls may own a few animals which are given them by their parents or close relations. Offspring of these domestic animals also belong to the children, but the milk, butter and meat should serve the needs of the household to which they belong. Within the household the husband and wife also have individual animals. Among the Tuareg, the husband or wife can freely sell or slaughter animals they own without asking permission of the spouse, while among the Fulani they must consult before selling. In both cases the meat or money should serve the needs of the household.

A woman may have title to animals in two different ways, with different arrangements for their management and disposition. First, the bridewealth animals paid by her husband's family goes to her father or oldest brother, but the offspring of these bridewealth animals go to the bride or her children. These animals are kept with her father's herds and her maternal family has use of the milk, or the meat if they are slaughtered, but the offspring continue to belong to her uterine family. Among the Tuareg, if there is a divorce the bridewealth is not returned, but is used to provide for the children.

A second kind of ownership is more directly under the women's control. It is the obligation of the bride's family to send her to her new home with a dowry consisting of household goods and animals--usually 5 or 6 donkeys and 10 to 40 goats. Sometime after marriage it is customary for a husband to give his wife a gift of animals according to his means--a few goats, one or two camels. This gift remains in her husband's camp so that the animals serve the needs of his household and their offspring.

In Madame Rupp's seminars with both Fulani and Tuareg herders, one of the major concerns expressed was that the government's program to reconstitute herds lost in the drought was replacing cattle only for the men. Women's stock was not being replaced. This was crippling their social system--animals were unavailable for dowry and bridewealth payments, women had lost their independent property. This was apparently the unintentional result of the government program that issued a card to the head of each family, and replaced animals only to the family head.

Program Administrators' lack of understanding of sex role control of resources seriously damaged nomadic women's economic and social positions.

Because usufruct rights are important among the nomads, people who are in need will be given the use of animals temporarily. Families also have rights to the use of animals they don't own, such as the cattle

of sedentary farmers taken north in the collective herds during the rainy season.

The disposition of the milk and cheese that is a product of all these animals is the woman's responsibility. When and where it's possible, she will trade milk for millet from sedentary farmers. In good times, the trade ratio is a measure of millet to a measure of milk. If times are bad for one group or another, the ratio will change. Sometimes the pastoralists will exist entirely on milk for months. One source (Galon cited in Nicolaisen, 1963) cites 4 liters per day as the necessary amount. Nicolaisen himself cited 8-10 liters per day. Nomads say they get "weary" from just milk and prefer other foods.

Men trade further afield and use the cash profits to buy grain. In many groups, the men have traditionally been traders and middlemen transporting goods for long distances. These trading caravans have diminished in importance, and are no longer a major source of income for most groups, but men still trade animals vigorously. In some cases, where nomads have settled near towns and cities, milk has cash value. When milk is sold for cash, the trading sometimes passes out of women's hands and into men's.

I could find no indication that vegetables, cereals or gathered food were produced in large enough amounts by pastoralists for surplus to be sold. Their major cash product is meat and occasionally milk.

Female goats, sheep and cattle are all slaughtered for food somewhat before the end of their reproductive years, often for ceremonial occasions. The meat is consumed by the family or the live animals are sold for slaughter. Younger bulls and bullocks are sold to traders and are the major cash crop of the pastoralists.

VIII. Sex Roles in Food Processing

Between the time food is produced and consumed, most of it has to be processed in some way. Sometimes this is done before distribution, sometimes after distribution. Since there is such commonality in the patterns, for simplicity's sake, I will discuss all food processing activities of both farmers and pastoralists together here.

The major food processing activities shared by both groups are water carrying, both for drinking and sanitation, cooking, including the gathering of wood and making of the fire, threshing and pounding of grain before cooking, and the drying and processing of foods for storage, such as fruits and vegetables, baobob leaves, and Kerite oil. In addition, farm women are responsible for brewing beer for social occasions and nomadic women are responsible for processing milk into cheese and butter. All these food processing activities are done exclusively by women, and almost all of them are subsistence activities.

With the exception of some processing of milk and kerite oil, and the drying of wild leaves, none of these activities produces any money.

These activities consume major portions of women's time and energy. Food could not be consumed if these activities were not performed. Yet they are often invisible in accounts of food systems. Economists do not generally include such activities in their accounting--(Spencer, 1976)--and as a result, development planning tends to overlook these activities. Thought needs to be given to ways of making these activities more visible within the planning process.

One solution to this problem is to look at the labor involved in various food-related activities, and to use a measure of labor as a way of making women's contribution more visible.

The ECA report on women's participation in food production and processing activities uses the unit of participation...for measuring women's labor in rural Africa. "To obtain a unit of participation... one makes the best estimate, based on available data and experience, of the percentage of labor associated with a particular task which may be attributed to women and express it as a fraction of 1. For example, it is estimated that in Dukohata, Tanzanian men work 1800 hour per year in agriculture and women work 2,600. This totals 4,400 hours of which 60% is women's work. Women's unit of participation is this 0.60." Using this method, they attempted to arrive at rough estimates of the participation of women in the traditional rural and early modernizing economy in Africa as a whole in order to provide a model.

IX. African Women's Participation in Food-Related Activities

Production/Supply/Distribution	Unit of Participation
1. Food production	0.70
2. Domestic food storage	0.50
3. Food processing	1.00
4. Animal husbandry	0.50
5. Marketing	0.60
6. Brewing	0.90
7. Water Supply	0.90
8. Fuel Supply	0.80

The ECA report suggests that research needs to be done which would permit units of participation to be determined accurately for areas within countries, then on the national level, then for Africal. A limited amount of such research is included in several projects going on currently in the Sahel--in Upper Volta at the village level, in Niger at the District level (Zinder) and in a number of areas of Senegal. Much more of this research needs to be done to provide data in quantitative as well as descriptive terms. My own impressions of the division of labor in the Sahel would lead me to suspect that the figures for food

production and marketing might be slightly lower than the African averages cited in the table, but only sufficient research could establish what the proportions actually are.

X. Summary of Women's Roles in Sahelian Food Systems

To summarize this description of women's traditional roles in food production, preparation and distribution in the Sahel:

A. a significant amount of food production is accomplished by women, primarily in the areas of vegetable growing, gathering of wild plants, small animal production, and milking and the processing of milk products.

B. almost all food processing is done by women. This includes threshing and milling of grain, cooking, drying and preserving of fruits, vegetables, and leaves, brewing of beer, and the making of cheeses and butter, as well as the gathering of firewood and transportation of water that are necessary for these processes.

C. most of the food produced and processed by Sahelian women is consumed by "their immediate companions" within the subsistence sector only. A small portion of women's food production reaches the monetized sector, usually the local markets.

XI. Recent Changes in the Sahel

The foregoing has provided a description of women's traditional roles in Sahelian food systems. These total food systems were affected first by some degree of modernization and then by the drought. Currently, there is an attempt to affect these systems in a planned, rational way through long-term development programs. I would like to describe briefly the impact of each of these on the systems.

Modernization has not penetrated very deeply into much of the Sahel. The French pacified the nomadic tribes that raided in the area. This modified the feudal relationships they had had with sedentary farmers. Some endemic diseases were brought under control for both humans and stock, thereby increasing population growth rates. Cash crops for export were introduced and men began to farm them in small plots, but there were few of the plantations that developed in other parts of Africa. Plow agriculture was expanded. In the early 1960's there were a number of deep wells bored in the north to carry the cattle through dry periods. The French educational system was introduced and while a small number of Africans went straight through the system and into the best French universities, most of the population was untouched. To quote from a report describing the years just before the drought,

> "Human population pressure continued to rise and export crops became an important part of the output, replacing traditional culture in more favorable areas. The resulting pressure for increased production decreased fallow time and lowered productivity per hectare, even though total production continued to rise as a result of a larger percentage of the land being used for agricultural activities in any given year. Further, the expansion of cultivated lands in the moist areas decreased available grazing lands. Thus, even greater pressure was placed on the exceptional forage productivity of the Sahel. Heavy cutting of trees for firewood near urban areas contributed to ecosystem destruction." (Matlock and Cockrum, 1976).

For a while, the system continued to be able to handle the pressure because of very high rainfall levels in the 60's. But then the rains diminished, and in 1972 and 1973 in many areas they didn't come at all. The drought's impact was quick and dramatic. According to the area Development Assistance Program:

> The U.S. Center for Disease Control in Atlanta undertook a nutritional survey in 1973 which estimated that as many as 100,000 people may have died. International experts have estimated that perhaps 40% of the goats, sheep, cattle and camels on which much of the economy and social structure rests, have fallen victim to the drought, either through death, premature slaughter, or early sales. The drought has had a profound effect on the region; a fundamental weakness of the ecological base, disruption of the social and economic relationships, and the changing of basic ways of life. (Agency for International Development, 1975).

The drought called forth large-scale relief efforts, followed by the institution of international planning mechanisms for long-term development of the region. The international planning group, known as the Club du Sahel, has developed what is in many ways a model of sensitive, rational development planning for the area. The theme is intensive rural development. To quote an AID planning document:

> The region is poor in energy and mineral resources. There will be little opportunity for industrialization until agricultural development is assured. The proposed program must not result in energy dependence. Most of the people are rural and their socio-economic basis is in agriculture. The Sahel Development Program will not disturb this basis; the future of the Sahel clearly hinges on its agricultural production framework. . . The region's increased income will work to the advantage of all its people. (Agency for International Development, 1976).

The basic elements of the program are listed as Human Resources Projects, Near Term Rural Development Projects, Far Term Water Basin Development Projects, and Health Resources and Transportation Projects.

Because they relate directly to the topic of this paper, I would like to examine two elements--Near Term Rural Development Projects and Far Term Water Basin Development Projects in more detail. The Near Term Development Projects are intended to provide simple inputs to current farming and pastoral systems to make them more productive. These inputs might include fungicides for seeds, improved varieties of seeds, locally produced fertilizers (i.e., manures and phosphates) and improved crop rotation methods. In some places it would include the introduction of draft animals and plows to relieve the labor constraint in food production. Planning is being done with pastoralists for better placement and management of wells, and methods for managing the rotation of grazing land and delivery of simple preventive health services. As much as possible, the programs are attempting to use the people from the village in the planning processes out of a conviction that they know what their constraints are far better than anyone else.

Far Term Water Basin Development Projects are a much more ambitious effort to utilize the potential of the large river basins in the area with their fertile land and abundant water. Before these lands can be settled, their endemic diseases, such as onchocerciasis and sleeping sickness must be eliminated. Large scale efforts to do this are now in progress. If the basins can be resettled and brought into productivity their use will provide a basic food supply for the region both in wet years and in dry. Their production, added to the production of the traditional systems, would provide enough food for the expanding population.

This is the way the program is conceptualized. How is it being implemented? In what ways is it responding to women's position within this agricultural production framework?

In some ways it is doing fairly well. There are a number of Women in Development projects within the region that are bringing work-reducing technologies to village women. For example, cooperatively owned gasoline mills for grinding millet are being distributed through UNICEF in Senegal, UNESCO in Upper Volta and AID in Mali, and in the near future, AID plans cooperative programs with the UNESCO and UNICEF efforts. Some women's cash cropping of vegetables is being done under European funding in Senegal, and American funding in Mali. There are non-formal literacy programs directed to women in the UNESCO project, the AID human resources program in Chad, and at Operation Riz-Segou in Mali, among other places. In Senegal the government is going through an administrative reorganization, and Village Councils of both men and women are being allocated some funds to implement their own development projects. UNICEF and Animation Feminine are working with the women in the reorganized villages to develop small projects--some of these will be AID funded. Animation Feminine in Niger has animatrices in over 200 villages working with village women in agricultural production as well as health services. Sometimes they have been able to act as liaison between the local women and a large project to

encourage the provision of services to women. In one such case, the FED-funded 3M project, they were able to persuade the project to train the women in animal health and the treatment of seeds with fungicide.

But if the first principal of development is the Hypocratic principal "to do no harm," then there is a problem. At the same time that some programs are being developed to be responsive to women's needs, other programs are undercutting women's traditional roles by ignoring them. Most of the larger programs seem structured on the assumption that all farmers and pastoralists are men, that all decision-making is done by men, that all resources are controlled by men and therefore, a development project staffed completely by men, with male extension workers dispensing training credit and resources to men is an appropriate program structure. Exceptions to this pattern are far too few.

This problem is not restricted to the Sahelian programs, of course. Its prevalence as a world pattern has been amply documented by Boserup (1970) among others. It is, however, somewhat more dismaying in Africa with its well-documented dual-sex social systems. Traditional African societies tend to have two spheres of power, male and female. Sometimes the male power is conceptualized as formal power and the women's power is personal power, but often women's power is also formal and acknolwedged. In many traditional societies, a queen mother or a queen sister represented women's power at the top of the authority structure in roles that emphasized the importance of both sexes. Market women's associations, women's age grade groups, wives' associations and lineage groups all are features of many African societies.

Halkin and Bay (1976) attributing the modern neglect of the dual sex power distribution to colonial rule in which men had all the power, write, "Traditional systems of dispersed and shared political authority had no place in the colonial system."

Another cause of this neglect may be that much of a woman's food production is for her family's use and doesn't reach the monetized sector of the economy. It doesn't get into national production statistics, but people are eating it. By starting with the consumer, with what people are eating, a different picture of food production emerges than if GDP or aggregate figures of production for the country are used as indicators. This difference in perspective is crucial in analyzing women's contributions to food production, particularly in subsistence economies.

A good example of the problem is provided by AID projected budget for 1978 in this region. Of the $32 million budgeted, $24 million is going for food nutrition activities, $5 million for health and population activities and $3 million for education and human resources. Of the $24 million going to food production, the overwhelming amount is going to cereal and cattle production, which are primarily men's crops in the monetized sector. A small percentage is going to vegetable production, although the only relatively large ($611,000) vegetable production project does not describe sex role participation, and sounds as if they

may be trying to develop a cash crop for men. There is one small project for goat production included. There is no money for chickens, pigs, fruits or other gathered crops such as Shea butter or baobob leaves. Nor are there any funds for milk production or processing. There are, however, small projects for men gathering wild honey in Chad and Upper Volta.

No one seriously proposes that the Sahelian diet should consist only of grains and meat. Everyone expects that vegetables, fruits, greens, milk and cheese will continue to be produced. It is simple that little AID money is being expended to assist in their production.

Another factor contributing to neglect of women's role in food production is the fact that much of it takes place on uncultivated land--in gathering, small animal production and milk production. Alternatively it takes place on very small plots, in vegetable gardening. It is one of the characteristics of gardening that a great deal of food can be produced in a small space, but this very characteristic tends to work against women. For example, consider this quote, "Cereals are the major crop; many varieties are grown on about 65% of the cultivated land . . . Peanuts and cotton occupied about 25% of the cultivated area. Small amounts of manioc, yams sugarcane and tobacco were produced on the remaining 10% of the cultivated land." (Matlock and Cockrum, 1976). Women's crops are invisible in this account of land use. This invisibility may also contribute to the lack of development resources available for some kinds of food production.

The question of land use and access to land becomes crucial in areas where plow agriculture is being introduced, particularly in river basin resettlement. As farming practices are intensified and more effort and energy is put into each plot of land, land ownership tends to move from communal ownership with usufruct rights over the land to private ownership. This shift in the control over land is often triggered by population pressures. The increased demand for food produces an intensification of land use. The intensified use of land for cash vegetable production near urban areas is an example of such a shift. This intensification of land use is precisely what is intended in the river basin resettlement projects and the process presents a real threat to women unless it's handled very carefully. Women's current food production activities use very little cultivated land, and most of their products do not enter the money economy. As a result of both of these factors, their existence tends to be ignored by planners. In resettlement schemes, land is often subdivided and assigned to families. The <u>head</u> of the family is the person listed as responsible for repayments. As the land passes into private ownership, it is the family head who has ownership rights, and the rest of the family become his dependents. Thus, as land passes into a more privatized kind of ownership, women are squeezed out of independent access to land. The results for women's power and status are so disasterous that a number of writers (Boserup '70, Sacks '74, Mullings '76) have identified this loss of independent access to the means of production as <u>the</u> development event that marks the marginalization of women.

African women have resisted this marginalization quite vigorously at times, the famous 1929 women's wars in Nigeria is one example of such resistance. But the process goes on. Within the Sahel there is a current example of river basin settlement that illustrates this problem quite clearly. The French have a project to assist in the development of the White and Red Volta Valleys in Upper Volta. By 1947, 187,000 hectares had been mapped, 1,000 had been cleared and plowed. In 1974 there was space for 250 families to settle, and it was expected that 600 more families could be received before the start of the 1975 rainy season. (Moton, G. 1974).

The first families moved onto the land as planned and there was a substantial waiting list for upcoming farms. But within a year there were problems, wives were leaving, families were threatening to move out and new families were reluctant to move in. The Project Management approached the Voltaic Research Institure to find out why. The answer--because of the required land use pattern--women had no place for their vegetable gardens. The wells were far from the houses, making water for domestic use difficult and time consuming to procure. Finally, the women were not able to care adequately for the family's health because they could not find the necessary medicinal herbs and plants on the cleared land. (Gisseau, 1976). Some measures are being taken to correct these conditions, but the more serious questions of long-term private ownership of land has not been addressed.

How to avoid marginalizing women economically at this point is not at all clear. Have any societies passed through this stage with women retaining a measure of control over access to land? If so, what were the conditions of such a successful transition? Are there any alternatives to continued access to land that would provide women with independent resources and some independent economic base such as they have in more traditional societies with usufruct rights and dowries? These are all questions that urgently demand investigation before planning for river basin resettlement proceeds much further.

Whatever the causes, the pattern of exclusion of women's productive activities from access to development resources plagues many of the current development projects in the Sahel. Women's work, women's productivity, and women's control of resources is often being denied by the refusal of projects to relate to it.

Governments and development projects are male staffed. They relate most easily to formal male power structures. One solution to this problem might be institutionalization of visible, formal women's organizations for governments and projects to relate to in systematic ways. Interestingly enough, this organizational visibility is what African women themselves say they want. At the 1974 Regional Seminar on Women in Development sponsored by the UN Economic Commission for Africa, African women adopted a Plan of Action similar to the one American women recently endorsed in Houston. In the first resolution they call for a series of organizational structures on the national level that would include: (1) National Commissions on Women and Development to make policy recommendations and action

proposals, (2) Women's Bureaus of Permanent Secretariats of these National Commissions to undertake research, to formulate projects and programs, and, in general, to seek women's integration in all sectors of social and economic development, (3) an interdepartmental body of experts . . . to insure coordination of programmes and adequate representation within national policies and planning, (4) a non-governmental organization coordination committee, which might assist women to seek representation in decision-making bodies, to work toward changing attitudes, to supplement public resources and to promote international collaboration and exchange.

On the African regional level they called for an Africa Regional Standing Committee and a Pan African Research and Training Center to assist governments and voluntary agencies in strengthening the roles of women in the Africa Region. Since 1974, two of these National Women in Development Commissions have been formed in Senegal and Upper Volta and others are in various stages of formation. In addition to these commissions numerous other formal women's organizations exist at the national level in various countries. Some of them have organizational units that stretch down to the arrondissement and village level. In Senegal the national political party has a very active women's section that is running training and development programs in many regions. In Mali, Niger, Upper Volta and Mauritania there are National Women's Federations and some of these have published policy statements on the very specific development needs of women in their countries. Within the governments of Niger and Senegal, animation feminine programs organize village women to articulate their needs and help them to meet those needs at the local level. These groups and others like them need support for expansion. They also need greater visibility to donor agencies. During the summer of 1976 I visited many of these women's groups as a member of a CID/Arid Lands/AID team investigating the impact of development projects on women. The women were most eager to share their ideas with us. They have a clear perception of their situation and their needs, and very precise notions of what would be an immediate benefit to rural women.

What did these women's groups say they wanted from the development community? Very simple, practical things.

A. Relief from the enormous burden of work for poor women. UNESCO did an initial survey of women in their project area in Upper Volta. The most common request of the women was for relief from their excessive work load. First and foremost, they wanted gasoline or diesel-powered mills for grinding their millet. "Diesel-powered mills work and women want them," Nariama Wani, Animation Feminine, Niger; "where there is a mill women use it," Louisette Alzoma, Secretary, Federation of Nigerian Women. They also want better access to wells to relieve their work. In some places they asked for pumps for raising water or some way of keeping the water clean in the well. "Men will support labor-saving devices and help dig wells as long as they don't threaten the traditional role division," Jeanne Zongo, President of the Federation of Voltaic Women. Two-wheeled carts (charettes) for transporting water and firewood

were also mentioned repeatedly in Upper Volta. In Niger, where Animation Feminine has had ten years of experience with the village women, their requests were more sophisticated. In addition to mills and improved access to water, they want weeding tools, fungicide for treating millet seed . . . and some Hausa women want animal traction for plows!

B. Help with gardens was requested. The village women ask for different varieties of seed, more seeds and better kinds. In Senegal, Catholic Relief had some small women's co-ops working with very simple drip irrigation techniques to extend their vegetable production season further into the dry season. Other women had heard of UNICEF's work with home-made cisterns and wanted help with them.

C. Help with food preservation, particularly ways of drying fruits and vegetables, and smoking fish. (This last request from Senegal).

D. Help with petit elevage--the raising of small animals. They want information on disease diagnosis for animals, also better information on animal nutrition. The Hausa women want to know about diseases in cattle. They also want better breeds of chickens and goats that they can cross-breed with their own. The Nigerian Women's Federation, in their policy paper, specifically request a particular breed of goat, "La Chevre rouse de Maradi." Upon further investigation, I found this explanation, "among goat breeders of Niger, the Red Maradi occupies an exceptional place on account of its skin, considerable numbers being exported. It is an excellent source of milk and meat while its skin is a source of revenue for farmers." (Robinet, 1967).

In all four cases mentioned above, they repeatedly mentioned the need for access to paraprofessional and professional training of the women staffing the various programs. In Senegal they needed training in food preservation techniques; in Niger, training in animal husbandry and agriculture. One program that was repeated to us over and over again in many contexts was the lack of adequate training facilities for women in agriculture, animal husbandry and rural development within the region. "There is a school for male agents (IPPR) that is being enlarged but there are still no places for women. No institutions are training women in agriculture . . . we would welcome it if you can help us with the training of our agents, " Nariama Wani, Animation Feminine, Niger.

In the planned expansion of agriculture training facilities in the Sahel, some slots are to be provided for women, but it would be useful to make a systematic assessment of the needs and the opportunities to see how well they match.

On the question of the acceptability of American women coming over to give technical assistance, "Religious leaders are reassured if women come to work with women," Mme. Marie Arne Sohai--Member, Chamber of Dupities, Senegal.

The final area was the one mentioned most often:

E. The need for cash income. "Women need a source of income. They can grow tomatoes, salad, make crafts," Josephine Gisseau, Upper Volta; "Women need cash," Barbara Skappa, Peace Corps, Mali. "Women need supplemental income--here in the Center they learn sewing to sell," Halimatou Orseini, PMI Clinic, Niger. "For rural women it is very important to give them some opportunity to earn money. It will help those who earn and those who don't but know they could. Their families will respect them more." (Boserup, 1976).

Literacy and health needs, although outside the purview of this paper, were also mentioned frequently.

XII. Conclusions

From the foregoing discussion, what conclusions can we draw?

A. Women are a major element in the food producing, processing and distribution system in the Sahel. Studies should be done to qualify this contribution.

B. There are several successful projects in the Sahel that are specifically focused on supporting the effective participation of women in these systems. Several more such projects are in the planning stages now.

C. There is a major international development effort going on in the Sahel that is in many ways a model of thoughtful development assistance. However, in spite of some good faith efforts, the presence of women as an integral part of the agricultural system is being ignored in most of the larger projects. Assistance, training and resources are being delivered to men and men's crops proportionately far more than to women and women's crops. This differential input tends to undercut women's traditional roles and power.

Analysis of sex roles and responsibilities of the target population should be included in planning each project so that services and resources are delivered to the appropriate people.

D. The emphasis on development of a few food crops at the expense of others is a poor strategy for assuring adequate food for all. In an economy where most food for most people will be produced and consumed within the subsistence sector for some time yet, it would be wise to attend to increasing the productivity of a large range of subsistence activities.

E. Intensification of land use, with its accompanying changes in access to land present a threat to women's traditional roles and status unless it is handled very carefully. I would echo Paula's point that "Research in land tenure changes and women's rights is important and could be profitable . . . What is the impact of land privatization or nationalization on women?" (Paula, 1976).

F. A contributing factor to the neglect of women's participation in Sahelian food systems is that women are not present in any numbers in either African or American government agencies dealing with agricultural development. With few to act as advocates for women's fuller participation in projects, it tends to be ignored.

G. This problem is intensified at the international level in the Club du Sahel.

H. Official government commissions on Women in Development and other official women's groups do exist in many Sahelian countries. They are new, and often have a good grasp of the fundamental realities of development and they are most eager to be involved in the planning of development assistance.

These African women's groups could be involved as a resource in planning integrated projects as well as in projects specifically focused on women.

XIII. References Cited

1. Agency for International Development. Development Assistance Program 1976-1980 - Central West Africa Region. Volume I, Washington, D. C., Department of State, November 1975.

2. Agency for International Development. Opportunity for Self-Reliance: An Overview of the Sahel Development Potential. Washington, D. C., Agency for International Development, 1976.

3. Agency for International Development. Sahelian Africa: Program Summary 1978. Washington, D. C., Department of State, 1977.

4. Boserup, Ester. Women's Role in Economic Development. New York. St. Martin's Press, 1970.

5. Dupire, Marguerite. "The Position of Women in a Pastoral Society" in Women of Tropical Africa. London. Routledge and Kegan Paul, 1963.

6. Gordon, David C. Women of Algeria: An Essay on Change. Cambridge, Harvard University Press, 1968.

7. Hafkin, N. and Bay, Edna. Women in Africa: Studies in Social and Economic Change. Stanford University Press, Stanford, California, 1976.

8. Hosbaum, Eric. Pre-Capitalist Economic Formations. London, Lawrence Wishart, 1964.

9. Intech, Inc. Nutrition Strategy in the Sahel, Final Report. Washington, D. C., March 1977. Contract AID/Ta-C-1214,W010.

10. Lahuec, Jean Paul. "Une commuate evolutine mossi zaongho (Haute Volta.)" Etudes Rurales, No. 37-39 (1970), pp 151-172.

11. Moton, G. "La Mise en raleur des vallees des Volta, Blanche et Rouge en Haute Volta". Actuel Development, No. 4 (Nov. 1974) pp 44-50.

12. Matlock, W. Gerald and Cockrum, E. Lendell. "Agricultural Production Systems in the Sahel," in The Politics of Natural Disaster. New York. Praeger, 1976.

13. Nicolaisen, Johannes. Ecology and Culture of the Pastoral Tuareg. National Museum of Copenhagen, 1963.

14. Paula Achola. African Women in Rural Development: Research Trends and Priorities. Overseas Liaison Committee Paper No. 12. Washington, American Council on Education, 1976.

15. Pauline, Denise. Women of Tropical Africa. London. Routledge and Kegan Paul, 1963.

72

16. Robinet, A. H. "La chevre rousse de Maradi, son exploitation et sa place dans l'economie et l'elevage de la Republique du Niger." Rev. Elev. Med. Vet. Pays. Trop. 20 (1967) 129.86.

17. Rupp, Marieanne, Report of the Sociological Study Conducted in the Districts of Tanout, Dakoro, Agadez from March 30 to April 30, 1976. Agency for International Development, unpublished, 44 pages

18. SEDES quoted in Intech, Inc. Nutrition Strategy in the Sahel, Final Report, Washington, USAID Contract ta-C-1214, W.O.10.

19. Sanday, Peggy. "Female Status in the Public Domain" in Women, Culture and Society. Palo Alto, Stanford University Press, 1975.

20. Simmons, Emily. "Calorie and Protein Intakes in Three Villages of Zasia Province", May 1970-July 1971. Samari Miscellaneous Papers (Nigeria) 55 (1976).

21. Sacks, Carol. "Engels Revisited" in Women, Culture and Society. Palo Alto, Stanford University Press, 1975.

22. Spencer, Dustin. African Women in Agricultural Development: A Case Study in Sierra Leone. Overseas Liaison Committee Paper No. 9, Washington American Council on Education, 1976.

23. United Nations. The Data Base for Discussion of the Interrelations Between Integration of Women in Development, Their Situation and Population Factors in Africa. Economic Commission for Africa, Addis Ababa, 1974.

24. United Nations. Economic Commission for Africa/Food and Agriculture Organization, Women's Program Unit. The Role of Women in Population Dynamics Related to Food and Agriculture and Rural Development in Africa. Economic Commission for Africa, Addis Ababa, Ethiopia, 1974.

25. United Nations. Plan of Action for the Integration of Women in Development in Africa. United Nations, Economic Commission for Africa, Addis Ababa, Ethiopia, 1974.

XIV. Interviews

1. Alzoma, Louisette. Secretary, Federation of Nigerian Women. Niamey, Niger. July 14, 1976.

2. Boserup, Ester. Economist. Wellesley, Massachusetts. June 1976.

3. Bingham, James. Political Scientist. Bamako, Mali. July 13, 1976.

4. Compase, Scholastique. Director, UNESCO. Project on Equal Access to Education for Women and Girls. Ouagadougou, Upper Volta. July 1976.

5. Digne, Ana. Director. Promotion Femine. Dakar, Senegal. July 26, 1976.

6. Orseini, Halimatou. Assistant Sociale Direction de la Affairs Sociotes, Niamey, Niger. July 15, 1976.

7. Paula, Achola. Anthropologist, Institute for Development Studies, Kemp. Washington, D. C. April 1976.

8. Skapa, Barbara. Assistant Director, Peace Corps. Bamako, Mali. July 12, 1976.

9. Sohai, Marie Anne. Member, Chamber of Dupities. Dakar, Senegal. July 25, 1976.

10. Wani, Nariama. Agent technique d'animation. Niamey, Niger. July 14-15, 1976.

11. Weber, Fred. Development Consultant. Niamey, Niger, July 15, 1976. Tucson, 1978.

12. Zongo, Jeanne. President, Federation of Voltaic Women. Ouagadougou, Upper Volta. July 22, 1976.

MALNUTRITION IN THE DEVELOPING WORLD

George V. Poyner

I. Introduction

This paper addresses the problem of malnutrition as it exists in the developing countries, the kinds of steps that are presently being taken by the countries themselves and the international aid agencies to solve the problem, and what might be done in the future to hasten the day when all have enough food.

II. Who are the Malnourished?

It has been estimated that over 500 million people suffer from chronic hunger in the world, with not enough food energy (calories) to meet their daily needs. Another billion humans, possibly more, get an adequate supply of calories, but face diets inadequate in proteins and other essential nutrients.

Of the more than one and a half billion people who suffer from hunger and undernourishment in the world, a disproportionate percentage is composed of infants, young children, and pregnant and lactating women. These groups are especially vulnerable. Infants and small children have food energy and protein requirements far greater, on a pound-for-pound basis, than do adults. The World Health Organization estimates that a child in the first year of life needs nearly nine times as much protein per pound of bodyweight as does an adult. Even a child 10-12 years of age has a protein requirement, measured on a per-pound basis, over three times that of and adult.[1]

Children under six years of age are also especially vulnerable to communicable diseases. We are all familiar with the list; which includes measles, chicken pox, mumps, whooping cough, and so on. Every one of these infections puts a severe strain on the system of the child. It has been estimated that when a child has the measles, the daily protein requirement is elevated by a factor of two or three. This gives us a clue to the high measles fatality rates in developing countries. Many of the children are really dying of malnutrition caused by the radically-increased protein demands put on their bodies to fight off the measles infection.

Women are especially vulnerable to the problems of malnutrition during and just after pregnancy. In the underveloped countries,

75

anemia is a serious nutritional problem among women, and this has especiall grave consequences in childbirth. A very high percentage of mothers who die in childbirth do so because of complications arising from anemia. Anemic mothers also often bear children with lower body-weight and higher nutritional risk than those of healthy mothers.

III. Why are these People Malnourished?

To answer the question: Why are these people malnourished, we must look at the complex of factors which affect nutritional status. These can be grouped into two categories: (1) those factors which affect the quantity and quality of food consumed by the individual; and (2) those factors which affect the biological utilization of the food consumed.

Included in the first category are: purchasing power; food habits, including taboos; food prices; and cultural practices that affect the intra-family distribution of food. These factors operate at the level of the family or individual. There are other factors in this first category that operate at a higher level than the family, and these include such things as agricultural policies which determine overall food availability; marketing constraints; and the interdependent factors of employment and family income levels.

IV. Income and Food Prices

In general, income is the most important of the factors affecting food consumption. In the underdeveloped world, the presence of malnutrition correlates well with low income. In many countries, over half of the population exists on family incomes of only a few hundred dollars a year. For these families, per-person food budgets are measured in pennies a day. To illustrate this, average food budgets in four of the five Central American republics amount to less than 50 cents a day, and for the lowest half of the population, in income terms (where the vast majority of the nutrition problem lies), food budgets are only 10 to 15 cents a day. This is in a context where food prices for most of the high-quality protein foods are about the same as in the U.S. Eggs cost nearly one dollar a dozen, and are typically small. The lowest quality beef stew meat, with bone, runs 50 to 70 cents a pound. Cheese is very expensive at over a dollar a pound, and milk, while price-controlled, is found only in limited supply Even beans, which are one of the cheapest sources of protein in Central America, cost 30 to 35 cents a pound. At these prices, it is an interesting exercise to try to put together a diet that is nutritionally adequate on 15 cents a day. Even if we assume that other foods are dirt cheap, it soon becomes apparent that the diet will be devoid of milk, meat, eggs and poultry.

"Best possible" diet studies for these countries show that at the low income levels we are discussing, the optimal diet contains a lot of corn, beans, and home-grown fruits and vegetables.

V. Food Habits and Taboos

A widespread cultural "theory" which operates in many countries assigns to each food a "heating" or "cooling" value. Foods are eaten or proscribed during certain periods of life based on the way these heating or cooling qualities are perceived to relate to the body and its needs at the time. To illustrate, in Central America it is common to find heating foods withheld from a child who has the measles, for a period of 40 days. A similar proscription holds for women, for 40 days after childbirth. The shocking thing to discover, from a nutritional point of view, is that the category of "heating" foods contains nearly all of the foods high in protein. The child from whom protein is withheld during measles runs a great risk of dying of protein-calorie malnutrition (PCM) in a matter of days. The mother who cannot have protein will run great risks to her own health, but also will not likely to have breast milk for her infant.

Mothers' milk represents the best food for infants, and in the developing world perhaps the cheapest, all things considered. Especially among the poor, it is very difficult to replace it, even with second-best substitutes. And yet in many parts of the underdeveloped world, the number of mothers who breast-feed their children for more than a few weeks is decreasing steadily. Much of this is due to aggressive advertising by the companies which sell substitute products and which appeal to the consumer's sense of status. The problem is complicated by members of the medical profession who also respond to the same advertising, and then recommend these substitutes to the mother.

A study made by Dr. Fernando Monckeberg and his co-workers in Chile nearly a decade ago showed that the use of bottle-feeding in infants led to radically increased infant morbidity and mortality in low-income families. The cause was traced to poor hygiene in the feeding process. Many low income families lacked ample supplies of clean water, and, in addition there was considerable ignorance of the importance of cleanliness to good health.

This problem has become so severe that in some countries nationwide campaigns have been mounted, encouraging mothers to return to breast feeding. Laws have been passed in a few countries which require employers to allow nursing mothers time during the day to attend to their babies' nutrition.

Other food habits or practices tend to show disfavor to certain family members. In some societies it is customary for the adult males to eat first, with the women and children eating what remains after they have had their fill. If food is abundant, this practice may do no nutritional harm, but when it happens that there isn't quite enough to go around, even under the most equitable of arrangements, the women and children suffer.

There are also practices which affect children directly and adversely, even when there is enough food to go around. Starch is sometimes used as a food for infants and small children, Its absolute lack of protein is a nutritional disaster. Mothers sometimes do not feed nutritious beans to children because of the problems they have in digesting them, and the resulting gas pains and flatuence. Frequently, bland foods are substituted which provide considerably less nutrition, but do not produce these effects,

VI. Effects of Malnutrition

Without an adequate supply of food energy, the human body cannot maintain a normal pace, nor can it function effectively at work or play. Much of the lethargy that is seen among the poor, both in the underdeveloped countries and here in the United States, comes from this slowing down of bodily processes from lack of food energy. The brain is strongly affected by this process. Although the brain normally represents only about four percent of total bodyweight, it consumes about 25 percent of total food consumed, in the form of pure glucose (blood sugar). During periods of prolonged and concentrated brain activity, the brain may consume up to 50 percent of the total food energy used by the body. It is therefore not surprising that the malnourished and underfed find it difficult to cope with even simple problems that require brain activity,

A diet short in protein heightens susceptibility to disease. The immune response system which is the body's armament against attack by infectious disease agents functions largely through the use of protein substances. If the body's stock of protein is in short supply, the system can fail to guard adequately against disease. Even the most innocuous of illnesses can become dangerous when defenses are down. In many parts of the developing world, measles, a relatively harmless disease among healthy, well-nourished children, is a dreaded, fatal illness. In Africa, measles fatalities often reach epidemic proportions, to the extent that in some areas there are almost complete gaps in the population among certain age groups, the result of wholesale slaughter of infants and small children by measles at some time in the past. A survey carried out in a Nicaraguan village in 1975 revealed that 25 children among the village's 400 inhabitants had died of measles in the 12 months prior to the survey. This represented over thirty percent of all the children under five years of age in the community!

VII. Nutrition-Health Interactions

In addition to factors which affect the level and quality of food consumption, factors which reduce the efficiency with which the body uses nutrients also play an important role in determining nutritional status. The single most important of these is infectious illness. Parasitosis is a close second in most developing countries. Nutritional

status is affected both by the frequency of illness and its duration. There is a synergistic relationship here. A well-nourished child, for example, tends to become ill less frequently than a malnourished child. Thus poor nutrition leads to more frequent illness, etc. A vicious spiral. A similar descending spiral exists for the length of duration of illness. Obviously, the longer the duration, the more impact on nutritional status, which lowers resistance and makes the illness hang on longer.

The following figure illustrates the steady deterioration in body-weight of a young child in a highlands village in Guatemala, as a function of a series of bouts of debilitating illness. Few of the infections shown would by themselves have been considered serious here in the United States, but the number of them, the undernourished state of the child, and a possible lack of proper environmental sanitation and health care, combined to produce a very serious cumulative effect by the time the child was three years of age.

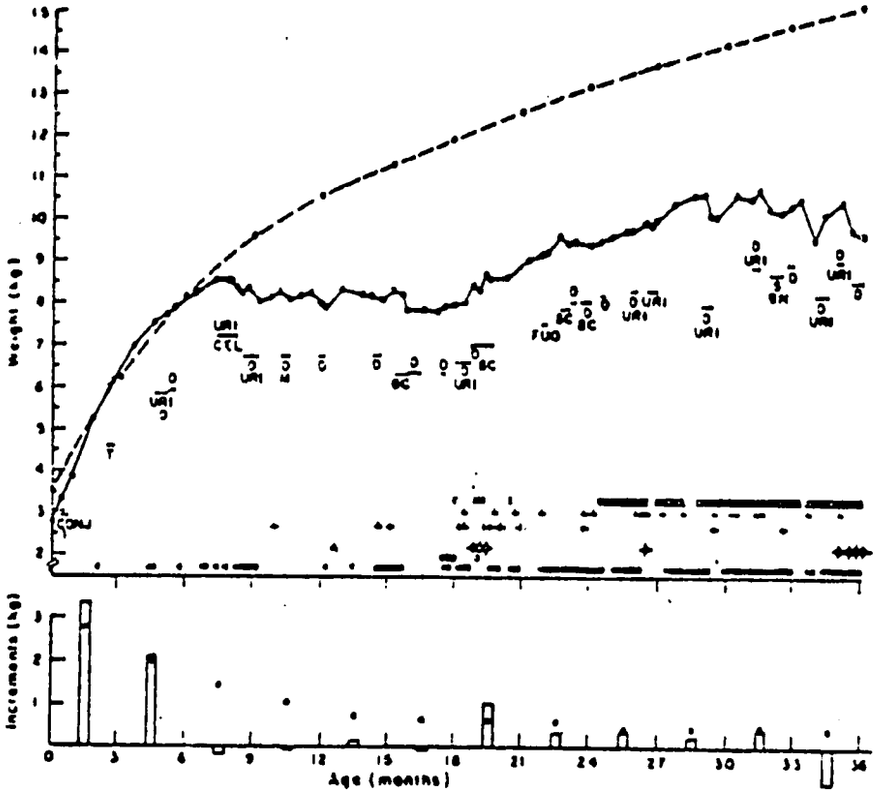


Figure 1. Weight, infections and infectious diseases in a male child. The solid line represents the weight of the child; the broken line is the median standard weight for a child of the same age. The length of each horizontal line segment indicates the duration of infectious disease.

BN-Bronchitis	S-Stomatitis	CONJ-conjucti-vitis
BN-Bronchopneumonia	URI-Upper Respiratory Infections	FUO-fever of unknown origin
D-Diarrhea	CEL-cellulitis	
I-Impetigo	T-Oral Thrush	
M-Measles		

Each mark along the orizonal axis shows a positive indication for the particular infection agent for a week.

x-Ascaris	o-adenovirus	+-Entamoeba histolytica
✦ Giardia lamblia	▲-enteropathic Escherichia Coli	⊕-Shigella
		●-Enterovirus

Source: Mata, L.J. et al, Infection and nutrition of children of a low socioeconomic rural community. Amer. J. Clin. Nutr. 24, 249 (1971).

VIII. Health Service Implications

Since any illness tends to lower nutritional status, the most logical nutrition-related health services are those which prevent illness, or which minimize its duration. Therefore, it would appear obvious that a higher value be assigned to prevention than to cure. For several reasons, this is not so. Analysis of health budgets in developing and developed countries show only token amounts allocated to preventive health care. Statistics concerning infant mortality and morbidity in developing countries show that the most frequent causes of death among infants and children are as easily prevented as cured: diarrheal disease; upper respiratory infections; communicable childhood diseases such as whooping cough, measles, chicken pox; tetanus; tuberculosis; and a few others.

The poor usually have little say in how national health budgets are allocated. Those who control the budgets generally are more interested in the health problems of the urban, higher-income family. Another factor of perhaps equal importance has to do with the fundamental difference between the delivery of preventive and curative health services. Curative services are driven by demand. That is to say that people who already are ill seek out, and often at great expense, utilize curative services, thus providing a self-sustaining economic system which can operate without central planning or control. This is not so for preventive health services. Only an extremely knowledgable populace can demand preventive services. Thus, curative services enjoy the kinds of feedback mechanisms that can generate political pressure, whereas the preventive "system", which isn't really even a system, cannot.

In spite of these difficulties, some countries are today evolving health care systems which address these problems. We will say more about these programs later.

IX. Water and Environmental Sanitation

Diarrheal disease is possibly the most frequent cause of malnutrition among children in underdeveloped countries. The child whose illnesses were charted in Figure 1 suffered twenty attacks of diarrheal disease in slightly over 30 months, for an average of one attack every six weeks. If diarrhea is not controlled quickly, the nutritional impacts are severe. Since many mothers consider it to be a normal state of affairs in the child, it is often not reported as an illness in survey interviews; thus, it is not viewed by many with the alarm that would activate the curative system.

Diarrheal disease is most often caused by bacteria that are borne in drinking water or transmitted directly through human contact. The former can be guarded against by taking pains to assure that drinking water is free of harmful bacteria. This means boiling the water or applying some other means of purification when a source of water is not clean. There are ways to obtain sources of pure water, as well, in some cases. Most wells that obtain water from beneath the runoff level will provide pure water. Another way in which one can avoid the bacterial infections that are passed on by human contact is to make sure contaminated wastes, such as human fecal matter, are disposed of safely. Many countries run periodic campaigns to install latrines in rural areas, and in a few there are continual programs of this nature.

X. What is Being Done?

The question is often asked, at this point: what is being done? Are the governments of these countries committed to solving the problems associated with malnutrition?

Until just a few years ago, most efforts at improving nutrition in the developing world focused on the curative side of the problem. More nutritionists and public health nurses were trained; maternal child health care centers to deliver health services, and rehabilitation centers to provide intensive care to the seriously malnourished were built; and supplemental feeding for low-income families was provided, with most of the food coming from donations such as those from the U.S. PL 480 program. Programs were usually limited in scope, and because they used middle-income personnel, were and still are, expensive to operate.

Meanwhile, numerous efforts to produce adequate quantities of wholesome food were undertaken by the scientific establishment. In the late 1950's scientists labored to perfect fish flour for human consumption, many convinced that this would be the sought-for answer to the world's food problem. When it became clear that the cost of the flour made it unaffordable to most of the world's population, it also became clear that the impact was to be miniscule.

The green revolution of the late 1960's faced a similar awakening. The thrust of the green revolution was to improve grain yields through

genetic engineering. Improved varieties and management practices were to have led to important increases in the world supply of basic grains, lowering costs and having strong impacts on human nutritional levels. While there have indeed been benefits, they have been on a much smaller scale than was hoped. The improved varieties required more, and more regular water, than did the older ones. They also needed fertilizers in order to achieve their potential. The added cost of water, frequently available only through expensive irrigation, coupled with the cost of fertilizer and the higher cost of the improved seed, placed the new varieties beyond the reach of the great majority of the world's small producers. Even in areas where the new varieties could be successfully used, there was the added problem of the need for education so that the farmers could evaluate the new strains and decide to accept them.

Although each of the one-dimensional attacks on the food problem has brought with it some small success, we are finally coming to realize that the problem itself is so immense and complex that no single intervention can be expected to bring more than a small increase in nutritional benefit.

Many people in the industrialized world seem to believe that the world's food problems can be solved by increased production among those nations which can effectively produce great amounts of food. This is not the case. In the case of wheat produced in the U.S., for example, in order to guarantee a farm price sufficiently high that producers can survive, the price per pound to the consumer in the developing country simply is too high for realistic reliance on this source. Also, as the cost of petroleum increases, the cost of both production and transport of the grain is likely to increase even more.

In a similar fashion, the food industries of the developing world will not solve the problem through the use of processed and manufactured food products. Even though in some of these products the nutritional balance can be improved, and the storability of the food improved, the added cost of processing, packaging, and marketing places the food out of reach of the poor majority.

XI. A Comprehensive Approach

Five or six years ago a new kind of nutrition program began to take shape, and today perhaps a dozen countries have similar programs under way. These programs attempt to be comprehensive in their approach to nutrition problems, tackling food production, marketing, consumer education, and the health and environmental aspects of the problem at the same time. This approach is a result of a growing awareness that programs which concentrate on only one or two of the determinants of nutritional status can have their hoped-for impacts partially or totally nullified by events or variables outside the control of the program itself.

On the food production side, the focus is on local production of nutritious foods rather than importation. This reduces the problems associated with marketing, and lowers the overall cost of food while at the same time increasing the family income for food producers. Consumer education is being developed along a variety of paths. One approach is to use mass media to familiarize consumers with the need for certain kinds of foods for good health. Another is to change cultural practices that are detrimental to good nutrition. An example of this is to encourage families to purchase and consume iodized salt, in countries where endemic goiter is a health problem, and teach mothers and other household decision-makers how to take simple steps to prevent and cure diarrhea in small children.

One of the most promising aspects of the new programs is the way health services are approached. Instead of using highly trained medical personnel, most of these new programs rely on a basic network of health "promoters" who are trained only in the basics of health care, in courses ranging from three months to a year in duration. In the best of these programs, each promoter has the responsibility of monitoring the health of a fixed set of families, through periodic visits to the family residence. Using this method of attention, the family can be reached regularly (usually about once every two months). Children can be immunized at home against childhood diseases. Such nutritionally-active ailments as parasitosis and diarrhea can be treated by the promoter or the case referred to the health nurse or doctor at the nearest health post or clinic. By seeing the home environment of the family, the promoter can decide if factors such as water supply or disposal of wastes are health hazards and counsel the family concerning how to deal with them. The promoter can help small communities to organize themselves for community action against malnutrition and can help them obtain assistance for the creation of such community-based efforts as school gardens, village gardens, community-level health vigilance, and potable water and sanitation projects carried out at the community level.

The ultimate aim of most such programs is to assist the community in shouldering the bulk of the responsibility for diagnosing and solving nutrition-related problems with aid brought in from outside the community only if community efforts are insufficient or to provide occasional technical or financial help. The programs attack the basic problem at its roots in the home and community rather than through centrally-located curative services. They spread the resource burden broadly among affected families, and then encourage self-reliance on the part of the families affected.

It will be several years before the current crop of multisectoral nutrition programs can be evaluated, their impacts on the nutritional problem discerned, and the best features selected for incorporation into the next generation of programs. In the meantime, perhaps the most important task for the next few years is for the rich and poor nations alike to arrive at an understanding of the critical importance of good nutrition and what this means for development policy in general.

XII. The Food for All Concept

Food for all is a worthwhile goal but accomplishing it is likely to be a long and demanding task. There are two elements which any such concept must contain in order to be a viable approach to the solution of the world nutrition problem. First of all, it must strive for a better understanding of how development policies and aid policies affect nutritional status, and this must include all policies, not just those which purport to affect nutritional status. The possible conflict of traditional development policies with nutrition objectives must be explored further, and the results integrated into future policy framing.

Research in a few countries seems to indicate that those countries which allocate high proportions of their resources to earning foreign exchange through exports also have the highest food costs in relation to personal income. If further rearch shows this to be true in many of the low income countries, it will point to an essential conflict between policy aimed at higher national income and policy aimed at improving nutritional status. This could place in question not only a host of development policies currently held in favor but much of development aid as well.

A second key element concerns the maximum utilization of community-level resources in the developing countries themselves and in the planning, implementation and evaluation of food and nutrition programs. The poor in the developing world cannot rely on the commercial food producers to satisfy their needs; they must become involved themselves. Only in this way can the self-reliance which is necessary to their long-term survival and the full use of all of society's resources be assured.

References

1. Energy and Protein Requirements, Report of the Joint FAO/WHO Ad Hoc Expert Group. Geneva: World Health Organization, WHO Tech, Rep. Ser. No. 522, 1973.

ELEMENTS OF THE FOOD PRODUCTION - DISTRIBUTION SYSTEM: AN OVERVIEW ON HOW WOMEN CAN CONTRIBUTE

Douglas D. Caton

I. Introduction

In October, 1975, I participated in an AID sponsored Conference on Women in Development. The conference was held in the National Academy of Science Building on Constitution Avenue in Washington and, in addition to AID Personnel, the conference included representatives from FAO, UNDP, the World Bank and from Private Volunteer Organizations. This conference followed by thirteen months AID Policy Determination 60, September 16, 1974, "Integration of Women into National Economies". Both the Conference and the AID Policy Determination were in direct response to Congressional mandates and of Section 113 of the Foreign Act of 1973, known as the "Percy Amendment". The proceeding reports of the conference clearly states that one reason, and perhaps the main reason, that the conference was held was to give programmers and implementors an opportunity to identify courses of relevant action for achieving the integration objectives as mandated and identified in the Agency's Policy Determination (PD-60).

However, I find little evidence which suggests to me that ways are systematically being sought, or mechanisms are seriously being considered, to effectively integrate women into their national economies. It is timely therefore, to decide on alternative ways and means to achieve this objective directly and concretely, at national levels. The outline of the format of this conference suggests that the leadership of the conference wants to do just that. However, this conference can not presume that the "why integrate women into economic development" question has been adequately answered. The answers are incomplete, at least in the sense of economic theory which says that labor will be employed up to the point where marginal value product is equal to its cost.

Since the concern is that women are not being fully employed, or adequately utilized, it must be either that, 1) the marginal value product of women in non-traditional employment is truly zero, and for this reason they are not being employed; 2) they are being excluded from the labor market for non-market reasons; or 3) they are not being utilized because rates of country economic development are not being maximized. At this time the MVP=0 proposition is not proven or disproven. The normally accepted view is that women are excluded from the labor market for non-market reasons. Considerable evidence exists that LDC economic development rates are not, generally, being maximized. Therefore concerns with

"women in development" are also manifestly a concern with national economic development and general social welfare.

Even as economic development of a sector is indistinguishable from national development concerns, women's employment in national economic development is indistinguishable from "basic human needs". This is because while labor income is not directly a human need - abstractly considered - it is a means of fulfilling these needs. And, by the same line of reasoning, fulfilling human needs education, health services and the like is a direct, though intermediate step, to making it possible for women to be integrated into their national economies. The final closure step that needs to be taken to "close the circle" with respect to the interdependent cause-effect relationships is effective integrating mechanisms. While the human needs programs of developing countries and their mode of utilization of women in economic development are deficient in many ways, the main gap in the entire economic processes as far as women are concerned is a rather complete absence of integrating mechanisms. This absence can be assigned considerably to socio-culture bias (which by the way seems to be of paramount concern to women in more developed countries also).

Because only so much can be taken up in a short paper, and since the basic human needs question with respect to women has been treated much more effectively than I could do by women directly involved, for a concise statement on the human needs question I refer you to a recent paper by Arvonne S. Fraser, Coordinator, Office of Women in Development, Agency for International Development, entitled "Practical Aspects of Integrating Women in Development into a Basic Human Needs Program", September, 1977. Ms. Fraser has prepared a definitively comprehensive statement on integrating women in development into a basic human needs program, and her recommendations on mechanisms to achieve this purpose are particularly well reasoned. Her suggestion on national inventories on social and economic conditions is of particular significance as far as this paper is concerned because these inventories would provide better insights than we now have on the constraints that need to be over-come to set up effective integrating mechanisms.

And since the food system is an integral element of national economies and national economic growth, if not the leading element, as part of this introduction to the subject of women in the food system, I would like to reference a national economies paper that Roberta van Haeften, U.S. Department of Agriculture, and I prepared in May, 1974. This paper, entitiled "A Strategy Paper for Integrating LDC Rural Women into Their National Economies,", was, perhaps, more theoretical than could be handled by the normal AID processes, but it is a perfectly valid presentation on key economic elements and considerations relative to integrating women into their national economies. Should this conference follow through on the objective of preparing a "strategy" model on integrating women into economic development, I would suggest that this paper is a source of background and strategy materials.

II. Basic Economic and Integration Considerations

The specific Assignment of this paper is to discuss "how can women contribute" to economic development through the mechanism of the food system, or, alternatively, to lay out the elements and considerations that would be involved in such a discussion. I will endeavor to do both, starting with women's traditional role in the food production and marketing system.

Relevant to the entire integration topic is a currently held thesis, at least by some, that not to integrate women can have negative, if not dire, economic consequences. This thesis is not better stated - that women not only have a right but a responsibility to use their mental and creative energies effectively for personal satisfaction as well as the national good - than in a report on underutilization of women by Elizabeth Koontz in which she says:

> "...Failure to utilize fully the talents and abilities of women diminishes our total productive effort, deprives the economy of workers needed for vital domestic programs, and has a depressing effect on the whole job structure."[8]

Proof of this thesis would, of course, advance the cause of integrating women into national economies immeasurably.

Administrator Gilligan, Agency for International Development, noted in a recent speech, reported in the December 12, 1977, issue of The Washington Post, that "women are responsible for 40 to 80 percent of all agricultural production in the less developed countries" and that about 30 percent of rural families in the Third World are headed by women. Nevertheless, even though the target group of AID rural development projects includes the rural poor, the small farmer, the malnourished, and the illiterate, in implementing these projects seldom, if ever, has explicit account been taken of women.

Moreover, the broad range of projects of the international assistance community, and of the countries themselves has only slowly moved in the direction of explicit consideration of women, often only indirectly, and sometimes not at all. AID, for example, finances education projects involving the training of teachers and nurses, as well as family planning projects, but the traditional projects on agricultural production or institution building and the like have not, or seldomly, paid specific attention to the role of women - perhaps because it was not deemed necessary or appropriate.

Yet it is clearly not possible to design and carry out a successful project in agricultural production and marketing in a society in which women do most of the work and a good share of the trading without explicitly addressing women's role, now and in the future. That a "new-style" of project design and conduct seems to be in order is to be found in a statement by AID Administrator Gilligan that "unless and until women are given the education and technical training to increase food

production, there is little hope of improving productivity levels of the whole society in ... developing countries". While Administrator Gilligan's statement is perceptively correct, in terms of high-payoff from labor input, we need to go one step further. Also needed to make project design complete is includsion of mechanisms by which human and other resources are allocated among production, marketing, research and other public and private sector economic activities.

In comparing women's traditional role in agricultural production and marketing with the mechanisms and processes of a modern food system, we can see immediately that if the usual course is followed, full economic modernization of the system will supercede many of the traditional tasks performed by women. Partly, this is because modernization emphasizes technology, mechanization, and successively higher levels of skills assignments for which women are traditionally not prepared. Thus, while the modernization of agriculture may mean fewer burdens for women, it also may mean fewer jobs. This is where the basic human needs requirement outlined by Ms. Fraser comes into play. The basic human needs requirement must look forward to the ongoing learning, training, and education needs of the economy, not only to increase the elasticities of supply quality as to number, but also to improve its flexibility and mobility in employment opportunity.

A. The Food System

It is one thing to contend that women should be integrated into their national economies; it is quite another matter to be able to specify just how, when and where. What do we need to know about the food system to be able to specify this readily. We first need to know the composition and operational characteristics of the existing food system, its apparent stage of development; and then be able to appraise growth patterns and lines of production and marketing activity which might be taken. This requirement calls for a large amount of data, and a completely "holistic" analytical approach. The first thing that needs to be done is to identify its resource utilization from the point of view of employment.

The endogenous operations of the food system can roughly be divided into distinct production and marketing sub-sectors on the basis of the relation of each to food - production creating the product, marketing moving the product. However, there is considerable definitional overlap: processing for example, is often considered a form of production. For the purposes of this paper, agriculture production and marketing activities will be grouped as follows:

1. Agricultural production activities are composed of a set of individual farm input-output or production function relationships. The individual farm production functions can be aggregated by commodity to indicate time "flows" and total production. In turn, the aggregative commodity production functions can also be aggregated into an overall production function by "indexing" to show changes in levels and rates of output. In agriculture, the production resources are usually classified as:

a. The resources which form the fixed elements, or production constants, such as land and buildings. These inputs do not vary with annual production.

b. The variable production inputs which consist of labor, capital, and purchased inputs such as fertilizer, inputs which vary with production.

2. Marketing activities composed of a set of functions related to transport, storage, processing, or sales. These functions can be described and/or aggregated in the same manner and for the same purposes as the agricultural production functions. Marketing has variable input processes and fixed capacity considerations very similar to farm production.

3. The existence of socio-economic production-marketing mechanisms:

a. Information on prices, sales and products.

b. Trading processes including farm women, farmers cooperatives, independents, and members of the market community.

c. Marketing and production functions performed by the private (agro-business) sector.

d. Services (and sometimes functions) performed by the public sector such as the building of market facilities.

4. An over-all supply-demand relationship or function composed of commodity production flows and distribution patterns in the production and marketing sub-sectors. Farm prices are a derivative of the interaction of the supply and demand elements of this function.

5. A consumer demand function exogenous to the food system, and an endogenous labor demand as its derivative. Consumer (or market) demand for food is a function of population numbers, consumer preferences, and income distribution characteristics. Labor demand is a composite of three separate, but related, phenomena: 1) the production and marketing functions decided upon, 2) the activity level of each function, and 3) the prejudice or bias embodied in employment practices. The first two of these are price related. The third is mainly socio-cultural related.

6. A set of technical, technological, research, investment and education inputs and processes performed by the public and private socio-economic and policy sectors to identify, design, and implement projects and policies which will increase the supply eleasticities of variable inputs and improve the production and performance capacities of the fixed factors.

a. By substituting a cheaper resource, knowledge for example, for a more expensive resource such as land.

b. By improving the quality or increasing yields without commensurate increases in costs.

c. By reducing costs per unit of output or activity.

This agricultural production and marketing activity category is strategically important to accelerating agricultural production growth and improving income distribution. It is responsible for developing appropriate site specific, technology and for improving the technical knowledge of farmers through training and extension services.

Figure 1 is a diagramatic definition of the elements, and the functonal relationships, of a typical food system, as specified in the forgoing points.

B. Considering the Food System

An efficient way to determine where the gaps and deficiencies are in an existing system is by means of an induced technical growth (or development) model. Figure 1 sets forth the parameters that might be involved in such a model. However the evaluative efficiency of an induced change model is increased as it is supplemented with such complementary analytical techniques as production function analysis, high-payoff modeling (linear programming), or institutional analysis, for example, on particular features, elements, or sub-components of the system, e.g. demand-price analysis.

Also, one does not proceed far with a visualization of technical, economic and institutional changes which occur along the modernization expansion path of an economic sector such as the food system without soon being confronted with labor-saving. This fact has important implications for the training and/or educating of women if they are to have an employable chance. If we can anticipate that the labor demand curve becomes less elastic for unskilled labor, with modernization and that it becomes more elastic for skilled labor, unless women are trained or educated commensurately their employment opportunity become less with each improvement of the system.

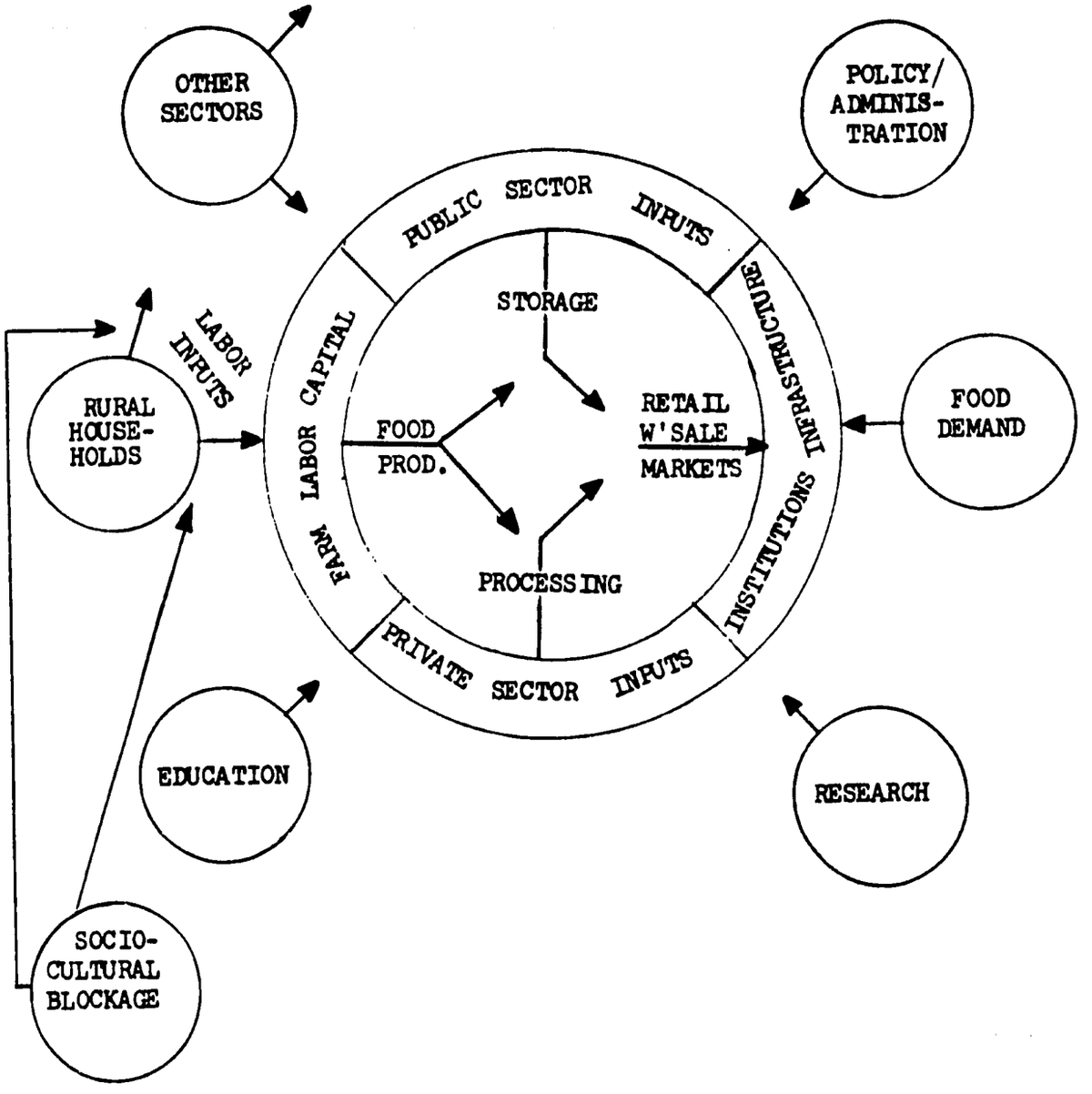
But it also means, even with proper credentials, that the total employment opportunity, counting in population growth, might also decrease -- over time. Given this very real possibility the question of economic integration of women into the food system, cannot be separated from the companion question of integration of women into the national economy. In Taiwan, for example this was exactly the question the government planning unit, the Joint Commission of Rural Reconstruction, was confronted with early on.[6] This induced technological change model includes:

a) Induced innovation in the private sector,

b) Induced innovation in the public sector,

c) Interaction between technical change and institutional growth.

Figure 1: Food Systems Definition



d) Dynamic sequences of technical change and economic growth. Innovation includes products, processes, organization, as well as technology and policy.

C. Related Economic Aspects

Earlier, the effect that bias and prejudice relative to employing women in national economies has had on narrowing the effective demand for women's employment was mentioned without explicit detail as to their makeup and impact effect. Two recent publications which are explicit in these regards are: 1) "Women's Role in Economic Development" by Ester Boserup, and 2) "A Profile of Filipino Women" by Isabel Rojas-Aleta, Teresita L. Silva, and Christine P. Eleazar. Other aspects of the labor demand and utilization situation curtailing women's opportunity are such consierations as default, indecision, and lack of perception. For example, I need only refer to the effect that lessening women's "traditional" burden has had on utilizing the inherent talent of women. Lessening women's work burden, such as getting water and firewood, or working in the fields, has no pay-off for women, and for the nation, unless it is accompanied by a complementary effort along the road to full economic integration, such as training in modern production practices, and crop intensification or diversification.

Default in this regard seems to be the usual case, unless the value of leisure time is considerable, on an aggregative as well as an individual basis, which I doubt, the social and economic opportunity costs can be very high indeed. Therefore, economic integration planners who take a hard look at the opportunity cost consequences in these regards, must be stimulated to develop broader gaged and more efficient economic integrating mechanisms and utilization opportunities for women. Possible routes and mechanisms, in addition to the above include local industry development as cooperative enterprises, recruitment for other economic sectors and for sub-professional and professional work in health, education, research and administration, starting with improvements in household maintenance and food preparation.

Perception of the critical role of the public sector needs to be advanced considerably so that efficient extension and training services, backed by appropriate research and education staffs and facilities, can provide leadership in the diffusion of innovations. The public sector is also essential in helping set up necessary infrastructures, institution building processes and providing price policy and other incentives such as credit and tax relief. But everything, except labor, cannot, and need not, be left to the public sector. The private sector can equally be depended upon to be innovative and energetic when given a chance. The private sector in the United States, for example, has been largely responsible for the labor-saving mechanization fundamental to the modernization of American agriculture, and for a host of other essential inputs such as agricultural chemicals, fertilizers and improved seeds. In Japan the farmers themselves first initiated such land-saving practices as biological innovation in plant materials, crop production intensification and diversification, soil fertility and soil chemistry improvements.

Essential, also, to regularize economic development of the food system is creating an efficiently operating market and non-market information linkage among farmers, public institutions, private and public supply firms, and market points. An efficient agricultural information system is likewise essential to effective planning, administration, and public policy making, as the history of the U.S. agricultural information system operated under the jurisdiction of the U.S. Department of Agriculture, with linkage with the U.S. Bureau of the Census for census year data, has well demonstrated.

While the assignment of this paper did not call directly for consideration of a perspective on the integration of women into their national economies, in segments other than the food system, I am including Figure 2 because of its possible prospectus implications for national food system modeling, and because it links population and production together meaningfully through the mechanism of a consumption-supply matrix. The notations on early warning systems and weather forecasting are somewhat peripheral to this discussion but it is entire relevant to note that consumption and production accounts form the data base. Detailed explanation of Figure 2 will not be attempted, but a few summary obervations may be in order.

With Figure 2 one can visualize, in the holistic sense, the five phases of technical and economic innovation, starting at the farm level:

1. Farmer needs analysis (the basic production model)

2. Technology assessment (the technology change model)

3. Venture analysis (the technology transfer model)

4. "Pilot" studies (cost/benefit analysis of a technological solution)

5. Area implementation and inter-regional transfer evaluation

The first two phases, needs analysis and technology assessment, are the selection steps for the technological requirements relative to the farmers' natural and human resources. A set of technologies <u>available</u> to satisfy the stipulated needs would then be defined and assessed to determine their potential and feasiliby for adaptation (e.g. tranferance). Phase three would constitute a technology assessment study.

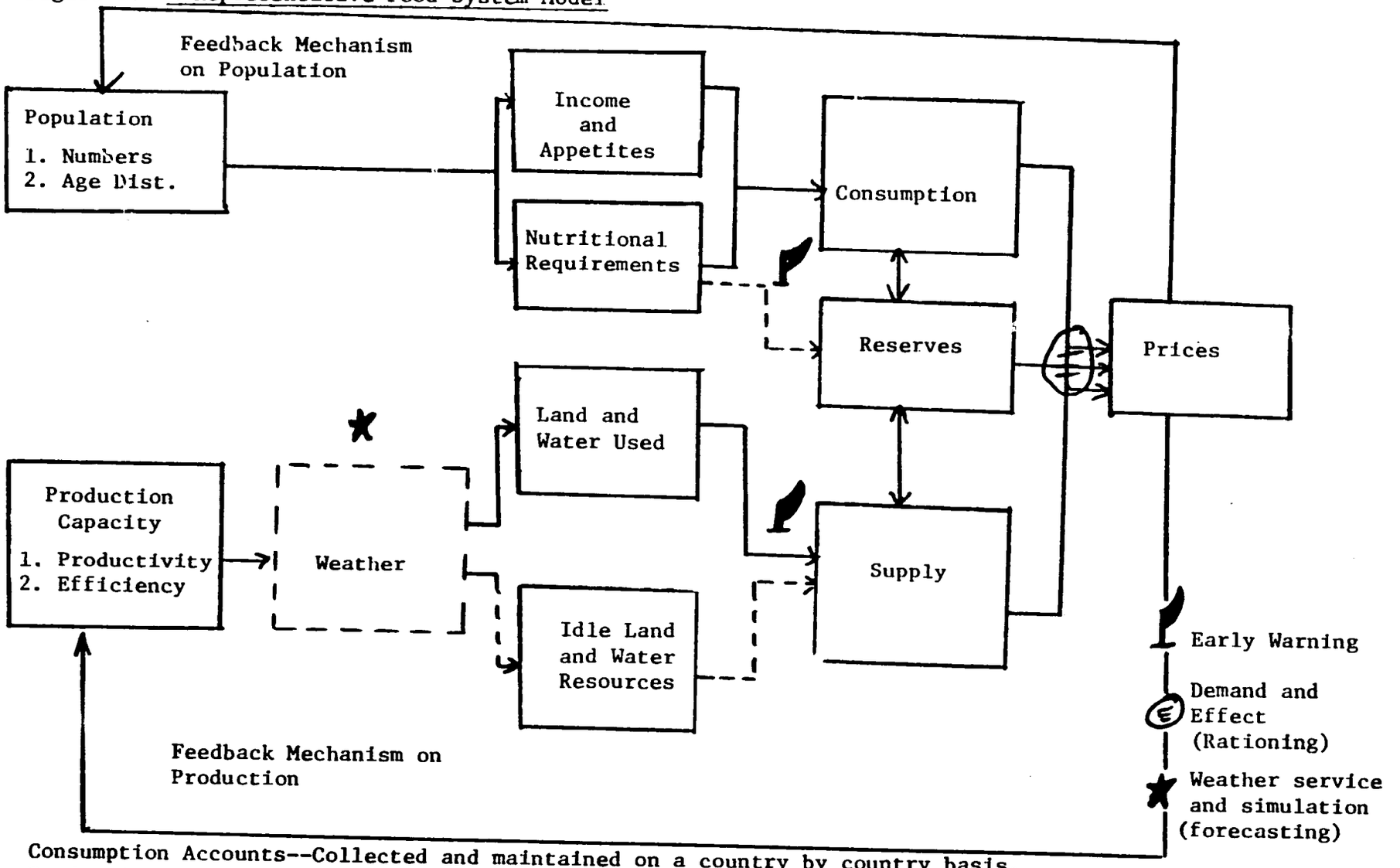
The fourth phase, the "pilot" phase, would consist of cost/benefit analysis of a technological solution, and would be conducted with respect to:

a. The viewpoints of the affected or involved farmers;

b. The potential returns of the venture to the nation; and

c. Government incentive requirements for general adaptation of the venture.

Figure 2: A Representative Food System Model



Consumption Accounts--Collected and maintained on a country by country basis.
Production Accounts --Collected and maintained on both a country and

Phase five, the implementation and evaluation task, requires the development and management of some sort of regional, national and international information system to facilitate the transfer and integration of "proven" technological change. This staging of phase five is the ultimate part of utilizing the preceeding evaluation and technology transfer system that would be created.

I know of no better way to illustrate private-public sector interaction and the interplay between a micro sector as an integral of overall economic system and national growth than describing the planning-development experience of Taiwan. In this experience women were explicitly dealt with as a national resource.

III. Economic Systems Development According to Figure 2: The Taiwan Case

The Republic of China Government, virtually from the time of its formation on Taiwan, took an integrated, total food system, approach to rural development. Their approach contained linkage to other sectors and its progress was overseen by the Joint Commission on Rural Reconstruction, the National Planning Unit. Four initial growth processes were used:

A. Stage I - following Japanese occupation Taiwan began reconstruction of research and educational facilities, repaired infrastructure, constructed standardized production of marketing units. Simultaneously they made a land capability survey and re-allocated the farm land.

B. Stage II - increased and improved transportation, both public and private.

C. Stage III - initiated the development of irrigation systems, and began the intensification of agricultural production,

D. Stage IV - concentrated on the development of an adequate agricultural service and input support industry.

In assessing cause-effect relations which induced the agriculture of Taiwan rapidly to reach its present highly productive status, consideration must be given the agricultural development emphasis of the Japanese during the period of their occupation on the Island. But, equal, or even greater, credit must be given the labor productivity of the Chinese people and the establishment of an innovative organiztion and leadership mechanism called the "Joint Commission on Rural Reconstruction". The Commission was constituted with "joint" ROC-USA Commissioners, but in every sense the Commission was, and remains, an official Republic of China national organization. JCRR, lead by T.H. Shen, and Y.S. Tsaing, was given the responsibility of looking to every aspect of agriculture development and human welfare - marketing, infra-structure, research and research institutions, education, with specific emphasis on generalized education, industrial, land conservation, water development and the like insofar as they relate to agricultural food production and marketing. The JCRR was also instumental in initiating, and carrying forward, such basic human needs

improvements as sanitation, health services, improved housing, and cheaper sources of fuel and light.

On Taiwan, agricultural output has increased at an average annual rate of about 5 percent since 1960-61. As a consequence, coupled with family planning efforts which have helped reduce human population birth rates, domestic agricultural production has been permitted to shift from primarily domestic food items to a product mix consisting of items for manufacture or trade, in addition to food. In summary, the Republic of China:

A. Rebuilt, modernized and extended the agriculture built by the Japanese.

B. Consolidated the land and organized land in farms into:

1. Corporate farms for such speciality crops as sugar cane

2. Cooperative farms for land that was very heterogeneous and in small plots.

3. Land reform units with emphasis upon individual enterprise and small family operated units, e.g. "land to the tiller".

C. Susequently, formal and informal agreements among farmers were developed to take advantage of the economies of scale effect of certain agricultural inputs such as machinery and to pool labor. This latter move was particularly important as industry and other sectors began to draw labor and capital out of the rural economy.

D. Inputs for research and extension:

1. Taiwan has approximately 35 research and experiment stations and institutes.

2. College degrees are emphasized, but numbers of MS and PhD level people is still not considered as adequate.

3. "Key" individuals have proven to be a significant part of development.

E. Integration of the Planning Institute (JCRR) with other Governmental Organizations, Farmer Associations, and Farmers, on implementation of policy, based upon six (6) strategy points:

1. Emphasis on applied research.

2. Supporting an innovative attitude by farmers.

3. Development of an integrated approach to agriculture production and marketing.

4. Provision of supplies, services, credit, and cash.

5. Providing strong price, farmer association, and other incentive arrangements.

6. Building roads, and accessible, efficient, markets.

The gains made in agriculture have made it possible to transfer large amounts of capital, and workers, from agriculture to services and other industries contributing significantly to the growth of the Taiwan economy. The successive growth stages also have seen the shifting and transformation of agricultural production systems to more diversified production and to multiple cropping, and to a more and more commercialized agriculture. All these changes have resulted in the development not only of a more sophisticated marketing system, but farmer involvement; but has also given agricultural production an international dimension with a select number of fresh and processed products, such as bananas, mushrooms, and white asparagus.

The commercialization for agriculture has:

A. Resulted in placing most Taiwan farmers, however small, on a commercial basis;

B. Developed land ownership pattern based upon the decision making ability developed by the farmer;

C. Geared capital, credit and technical assistance to agriculture based upon area and regional concepts of general economic development.

A simplified version of the development planning concepts and principles used in agriculture by the Republic of China is diagramed in Figure 3. Not shown in the diagram are the off-farm employment procedures of the Government.

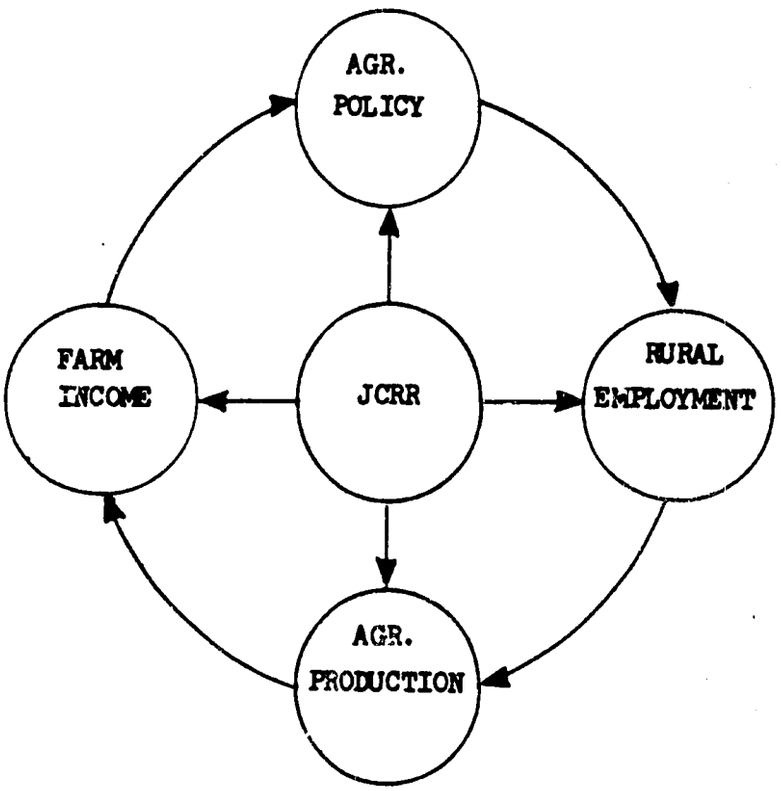
Agricultural development policy in Taiwan essentially addressed three main questions:

A. How much resources to allocate to agriculture.

B. How to distribute the resource allocation within agriculture

C. How to accomodate agricultural price, income and employment disequilibrium in the context of national economic development.

Figure 3: Representation of the Added Agricultural Income and Employment Opportunity Provided by JCRR



A strategy for integrating rural women into the national economy of Taiwan evolved directly and indirectly, from the third question. Prior to this integration state, the employment of rural women (primarily unpaid) was traditionally confined to the phases and tasks of agricultural production and household maintenance. Chinese women generally, however, have not been excluded from participation in the agricultural modernization process, as has been the case in some cultures. Particularly, they were integrated into the basic human needs services and activities developed.

Additionally, Chinese women, primarily the younger women, have been employed in every phase of rural development work - from helping to build roads, helping to set up and operate farmer markets, to packing and loading bananas on ships. Farm girls especially have found employment in food processing plants and in the agricultural inputs and service industries. However, this is not to say that Chinese women were considered and treated on an equal footing with males, but the socio-economic distinction does not go as far, in my opinion, as it might appear on the surface.

It was seen early by the Joint Commission on Rural Reconstruction, as the rural sector developed, that in spite of rapid intensification of agricultural production a labor surplus developed and was beginning to move off-farm. The surplus was partly a result of population growth, and partly caused by agricultural production modernization involving land consolidation and mechanization. However, in many ways migration cause and effect was really a two-way street. General education and desire for cash income also had marked influence upon rates of rural to urban migration - first locally, and then to the larger cities such as Taipei.

IV. National Economy Integration

Modernization and consolidation of farms and an expanding rural industrial sector both absorbed workers and created a labor-surplus. Thus, a place had to be found for the remainder. Having a keen sense of resource utilization, the Chinese Government was not willing to see a natural resource wasted, particularly one which could be assigned tasks requiring careful attention to detail and great patience. Many different avenues were sought, and many different directions were followed. The first step taken was to find a market for a product, or a market for labor: Surveys of the world's market were made to see which of the products Taiwan could produce would be competitive. The white asparagus processing industry in Taiwan resulted from one such survey made in Western Europe. The history of the mushroom industry in Taiwan is the story of a medical doctor, S.C. Hsu, who first found a market in Japan, learned how to grow mushrooms, and then assembled and trained a group of young girls to grow, pack and ship them.

Accompanying this trade development effort under an agreed plan efforts made to attract investment capital to Taiwan to set up, manufacturing plants which would utilize the labor surplus in both the rural and urban areas. Women have been a primary source of the labor complement. Many U.S. firms, for example, have set up fabricating plants in Taiwan to build radios, put together television sets, and assemble electronics equipment. As the need for even better trained technicians and more skilled labor was as seen as the Chinese economy continued to expand, and in fact foreseen as necessary to its expansion, foreign investors, under the cited agreements with the Chinese Government, established labor compounds consisting of a manufacturing plant, dormatories, food, health and recreation facilities, and training facilities.

Knowing how things have progressed in Taiwan, we can expect the integrated approach to development and the integrating approach to incorporating the human resource factor to continue in the future. And, as in the past we would not expect imagination and innovation to be limiting, although resource endowments and "capital fund" constraints may be. Under these circumstances, the question is does a country eventually face consideration of a world economic integration model, or does it, rather, attempt to go through successive economic and social refinements which will increase per capita income, e.g. reductions in per unit costs, improvements in conditions of trade, and continuously decreasing population growth rates?

V. Suggestions

In closing this paper, I would like to make four suggestions which might be considered by those interested in seeing that women are successfully integrated into their national economies. These are that they:

A. Move forward on the basic human needs strategies outlined in Ms. Fraser's September paper, beginning with education.

B. Move to set up a scheme to provide data and analysis on economic integration, using country level concepts and appropriate methodologies.

C. Develop cooperative working relationships with "interested" countries in the above two regards.

D. Commission a Taiwan study group to review the experience of the Chinese people and the Joint Commission with the problems being addressed by this Conference.

VI. Bibliography and References

1. Boserup, Ester, Woman's Role in Economic Development, St. Martin's Press, New York, 1970.

2. Boserup, E. and Liljecrantz, C., Integration of Women in Development, United Nations Development Program, 1975.

3. Caton, D.D., "Information Transfer and Diffusion" (staff reference paper), AID, 1976.

4. Caton, D.D. "Systems Development and Economics in Taiwan", (staff reference paper) AID, 1974.

5. Fraser, A.S. 'Practical Aspects of Integrating Women in Development into a Basic Human Needs Program", Agency for International Development, September, 1977.

6. Hayami, U. and Ruttan, V.W., Agricultural Development: An International Perspective, The John Hopkins Press, Baltimore, 1971.

7. "Integrating Women into Development", World Bank, 1975.

8. Koontz, Elizabeth Duncan, "Underutilization of Women Workers", U.S. Government Publication, 1974, p. 53.

9. Rojas-Aleta, I., Silva, T., and Eleazar, C., A Profile of Filipino Women, Capitol Publishing House, Manila, 1977.

10. Van Haeften, R., and Caton, D., "A Strategy Paper for Integrating LDC Rural Women into Their National Economies", Agency for International Development, 1974.

11. "Water, Women and Development", United Nations, Water Conference, Mar Del Plata, Argentina, March 1977.

12. "Women in Development Conference", Agency for International Development, October, 1975.

13. Wymore, A. Wayne, "A Notebook on Systems Engineering Methodology", University of Arizona, 1970.

ASSISTANCE, HUNGER AND MALNUTRITION:

THE COMMODITY SYSTEMS APPROACH

Donald S. Leeper

Food for all, the assurance of adequate diets for all in the developing countries, is a principal goal of AID's assistance efforts, the mandate of the International Development and Food Assistance Act of 1975. Freedom from hunger is a basic human right and Congress, in the 1976 Right to Food Resolution, has made it a fundamental point of reference in the formulation and implementation of United States policy in foreign assistance. The goal is attainable but definition of a goal does not tell us how to achieve it, the subject of the comments here.

The goal is framed in the pragmatic and tangible terms of real food for real people, in terms of human beings suffering from hunger and malnutrition, the poor. It is specifically targeted, phrased in micro-terms, not in the macro-terminology of "development" or increases of gross national product, national production or per capita income as in the past. It is grounded on the reality that the majority of the people, the poor and hungry, live in rural areas -- in Indonesia 90%, in Nigeria 91%, in the Philippines 85% and in Costa Rica 61%. Unless we can satisfy the need of every member of the species for food, the most basic of all human needs, assistance directed at alleviating other ills will be of little relevance.

Success, or failure, will be measured in terms of whether the hungry actually receive adequate diets, words will not serve as a substitute for tangible food. Hunger and malnutrition is with us today, the U.N. estimates that some 400,000,000 did not receive adequate diets in 1973, and the situation has been deteriorating since 1965. Near term progress toward the goal will be essential if we are to build for the future.

With our new perspectives, development of approaches which are responsive to the challenge is necessary. We must start with the fundamental, reexamining underlying premises of past assistance programs and establishing a firm foundation for the new initiatives required.

Local food self-sufficiency is the key to resolution of the current, and prospective, hunger problem. Projected needs far exceed the potential productive capacity of the United States and other supplier nations. Even if this were not so, the transport, distribution and financial considerations would preclude reliance on imports as the principal avenue for meeting those needs. Development of the capacity to feed themselves must be

accomplished by the people of the developing countries, it cannot be done for them or to them by AID or anyone else. However, they do require appropriate advice and assistance in order to develop necessary capabilities, AID's role.

In the recently completed World Food and Nutrition Study, a panel organized by the National Academy of Sciences concludes that just increasing food production cannot resolve the hunger problem. Traditionally, the hunger and malnutrition problem has been conceived of as one of insufficent production with the consequence that principal emphasis of assistance has been on increasing production through research and technology. All too often anticipated benefits have failed to materialize because developed country production technology was inappropriate and unresponsive to the local problem, lack of attention to the question of how to translate the technology into concrete results at the working farmer level, institutional and social inhibitions were not taken into account, necessary inputs were unavailable, or important post-production elements of the food chain were inefficient or did not exist. Any effective approach must deal with such factors.

"The major immediate cause of hunger is poverty," notes the panel. The cost of producing and distributing food to a consumer must be paid by someone, an important verity often overlooked. In the development context, it can be paid either by the American taxpayer through tangible food assistance or the funding of such programs conducted by local governments, from the public purse of the developing country, or from productive activity of the consumer. There will no doubt always be some necessity for United States and local food assistance programs, but self-sufficiency will not become a reality until most of the consumers can pay such costs from their own labour.

Recognition of the significance of women in the resolution of the hunger and malnutrition problem, a departure from the almost exclusive male-orientation of the past, is of recent origin. They normally perform the food buying and preparation functions and, the UN estimates, serve as head of over one-third of the rural households in the developing world. Women represent major areas of nutritional deficiency, having special needs when pregnant and lactating and responsibility for the diets of dependent children who are over one-third of the population of developing countries. And it is estimated that women, as farmers, produce 50% of the food and, in some countries, control and operate up to 40% of the national marketing system. Failure of assistance programs to reach the women of the developing world will assure lack of success.

In the United States, and other countries of the Western world, food is grown, processed and distributed to consumers by entrepreneurs. Reportedly, even in socialist countries significant quantities of food are produced in small private productive units and sold in farmers' markets. Public and academic organizations have important roles but they are primarily of a supportive or regulatory nature. Participation of private enterprise will be critical for the achievement of the tangible results which the goal demands.

A sytems approach can provide the required analytical and management framework. The concept has proved effective in the attainment of results in programs and projects of limited scope. But it has not been developed or utilized as an aid in the resolution of broad spectrum development problems involving institutional, social and cultural considerations as well as economic and technological considerations. There is no reason why not, it just hasn't.

Food is the subject of a system. Nutrition relates to consumption, agriculture to production. The only purpose of producing food is for the fulfillment of the need or desire of a consumer. If what is produced does not reach the consumer, if he does not want it, if he can't or is unwilling to pay for it, the nutritional situation of the consumer is not improved and the producer is no better off, and probably worse off, than he was before he produced the product.

A systems approach provides the essential connection between comsumption and production, ensuring that the interests of the consumer and the producer, and everyone in between, are served. Consonant with the goal, adequate diets for the hungry or malnourished, we should view the system as starting with the consumer not the producer as we have in the past.

Improvement of the lot of the rural poor, rural developments, is essentially a problem of integrating effective consumer demand with the products derived from productive activities of the rural poor. Their principal activity is food production or related activities. Food system improvement not only will contribute to resolution of the hunger problem but also is probably the most effective way of achieving rural development goals.

The complete food system of a country encompasses the ways in which the nutritional requirements for its people are met. Every country has such a system. The total system is most complex with innumerable interrelationships between the various elements of the system. While an attempt to deal with the system as a whole might be an appropriate candidate for academic research and computer modeling, it is difficult to conceive of such work providing any tangible benefits for the poor or the hungry in the near future.

It is feasible, however, to select a particular commodity, analyze the needs of present and future consumers, and identify the factors involved in meeting those needs. Progress toward the goal can be achieved by improving, or establishing, an efficient system for that commodity without the inherent delays involved in trying to analyze and improve the food system as a whole. Individual community systems will serve as building blocks leading to an understanding of the system as a whole.

Initial emphasis on the commodities currently providing nutrition for the poor, not over 10 or 12 in any developing country, is most likely to show early results at least assistance cost. Consumer preferences are established, farmers are familiar with production and there is an established system which, in most cases, will be susceptible to improvement. Introduction of new commodities will require the establishment of new systems --

farmers must be convinced to grow the product, processors to establish required facilities and consumers to eat it. In the longer term picture new commodities will have an important role.

To illustrate, in Costa Rica corn is a major commodity source of nutrition for the poor, either directly as a grain or as an ingredient in animal feeds. The country is not self-sufficient and imports a substantial portion of its requirements. It is principally produced by small farmers who experience extremely low yields using traditional cultural practice and substantial losses from disease and spoilage due to lack of on-farm drying and storage. Between the consumer and producer a number of levels exist, each of which adds to the cost of the product to the consumer. All necessary technology to achieve substantial improvements is known, little further research is required. Emphasis on just these three aspects, and how to secure adoption of essential changes in past practices, would provide relatively dramatic immediate benefits for both consumers and producers.

Contrast this with the peach palm, an indigeneous fruit of Costa Rica, which appears from research reports to have a promising potential as an ingredient in animal feed. The commodity has not been commercialized in Costa Rica or elsewhere. In order to contribute to the goal, a four year growing period must be taken into account, the potential feed market must be explored and developed, and, because of rapid deterioration of the fruit after harvest, transportation and storage problems must be addressed.

In order to have a workable approach, a distinction between direct and indirect elements of the system must be made. Almost any form of human activity could be said to affect consumer needs or other aspects of the food chain, even though admittedly many are only peripheral. Judgement must be exercised and the focus must be on those activities which materially affect the efficient establishment and operation of the system.

The direct system is defined as being those activities directly concerned with the physical commodity itself -- production, harvest, on-farm use, assembly, processing, distribution and consumption. Indirect aspects are those inputs and factors which substantially contribute to, or detract from, the efficiency of the direct system with varying degrees of importance.

Governments of the developing countries will have to provide the leadership for institution and application of the approach. It will be incumbent on AID to assist in the development of necessary capabilities. Since most of the talents and experience required for the establishment and operation of the systems are found in the private sector, its participation will be necessary. Entrepreneurs, principally those of the developing country, will perform most activities of the direct system. Many of the indirect aspects will be the province of the government, with the academic sector, private voluntary organizations and others making important contributions.

A close and cooperative working relationship between public and entrepreneurial organizations, and others who can contribute, will be essential for success. Appropriate private firms will have to be involved in the planning, analysis and design phases of government programs and not just relegated to implementation as in the past.

The commodity system approach is a new concept; it should be developed and proved on a pilot country basis before being adopted for general application. For the selected countries, it should proceed in the following steps:

1. Conduct of a nutritional survey adequate to identify the current, and prospective, nutritional needs and the commodities which serve as the principle sources of nutrition.

2. Preparation of a commodity system analysis of the current commodity sources; a survey, and analysis, of promising new commodities will have a second priority.

a. If the commodity is one in common use in another country, or countries, a model of the direct system for the commodity will be constructed from information available in such countries and critical indirect aspects will be identified.

b. If the commodity is one already produced in the pilot country, and the first priority commodities will be, the existing commodity system will be researched and analyzed. A knowledgeable comparison with the model will identify potential areas of improvement in the existing system.

c. If the commodity is not being produced in the country, the model will serve as a guide for the new system to be established.

d. No model will be available if the commodity is not one in common use in other countries, then an efficient system will have to be designed from experience, available information and relevant research.

3. An informed synthesis of the separate commodity systems will identify common and supportive elements, develop an understanding of the inter-relationships and an increasing awareness of the form and content of the food system as a whole.

4. Proceed with the design and implementation of appropriate assistance and programs within the systems framework developed.

The suggested approach provides the comprehensive and integrated view needed for the identification of relevant and important factors and inter-relationships at an early stage and the development of cost-effective programs responsive to the goals. More specifically it will

- Outline the structure of the system and its essential elements,
- Define the inter-relationships between the various elements,
- Provide the basis for establishing emphasis and priorities, ensuring that all important links are in place at appropriate times,
- Provide a basis for comparative assessment of various commodities in terms of contribution to nutritional and rural development goals,
- Ensure the most effective use of technical specialists by identifying specific needs and their relationship to the goals,
- Identify areas of necessary, or desirable, present or potential entrepreneurial contribution, cooperation and interest which will serve as the foundation for private sector initiatives.

A viable program to stimulate participation of entrepreneurs must be an integral and important, not just peripheral, part of the country's program if the goals are to be achieved. Success will, in large measure, be determined by the extent of entrepreneurial involvement.

The public sector's principal role in the food system is in the stimulation of private sector activity, in providing a hospitable climate and assuring necessary support in indirect aspects. It can only be effectively involved in direct activities of the system to the degree that they are inappropriate for private enterprise. Governments should emphasize the formation of groupings, using the cooperative or other forms of organization, of small farmers or other entrepreneurs presently too small to be commercial, into economically sized units. But it must be recognized that such organizations must be managed in accordance with entrepreneurial principles or they do not suceed. Once effectively established they, in effect, become self-sustaining members of the private sector community.

Those engaged in private enterprise are as concerned about hunger in the developing world as those in public or academic organizations and are seeking ways in which they can contribute. A recent study, "Partners in Agroeconomic Development," sponsored by The Conference Board, a business-oriented research organization with over 4,000 associates, concludes that effective cooperation of business and public sector organizations will be essential for resolution of the hunger problem, neither can achieve the goal without the other. On a working level, recent discussions with eight local agro-industry firms in Costa Rica demonstrated their strong interest in closer cooperation. The business community recognizes the need for a more effective relationship, one which discards the adversary positions of the past and focuses on the achievement of results, one which satisfies the interests and limitations of both. The time is ripe for an AID initiative directed at forging that relationship with U.S. companies and those in the developing world.

The goal of adequate diets for all in the developing countries <u>can</u> be achieved within a reasonable time frame, given the necessary commitment

and appropriate assistance. The commodity system approach provides the analytical and management framework for assistance and enlistment of private enterprise provides the vehicle for meeting the challenge, real food for real people. Development of the concept should be pursued in the pilot countries with all deliberate speed, otherwise Nature will resolve the problem with serious consequences for all. These represent new initiatives which are directly responsive to the new directions of AID's mandate.

A SIMPLIFIED APPROACH TO AGRICULTURAL SYSTEMS

Milo L. Cox

I. Issues

Agriculture directly controls the economic and social life of about 70% of the world's people. The present state of this agriculture, although improving slowly, still inhibits economic progress, frustrates the improvement of rural life, and encourages urban migration. Accelerated levels of economic development, political stability, and human well-being depend strongly upon the rate at which the LDCs adopt measures for solving four primary agricultural issues, namely:

A. Materially enhance political response to the rural sector.

B. Significantly increase the production, distribution and utilization of food and fiber.

C. Greatly improve effective rural income levels.

D. Substantially increase the wise utilization of agricultural resources.

II. Performance to Date

Sporadic progress has been achieved in each of the above basic issues facing the LDCs, but this progress has been slow and erratic. Rural per capita incomes have remained below one-third of urban incomes and generally have failed to increase proportionately with rises in the GNP. Farm production in absolute terms has grown, but per capita food production has remained relatively static on a world basis. Government response to the needs of the rural sector, in terms of price incentives, infrastructure, agricultural research, credit availability, marketing functions, and Ministry of Agriculture budgets has been inadequate and vast areas of potentially productive lands still remain idle.

WO

These constraints, among others, have resulted in production levels that have about maintained the status quo. These levels are too low to satisfy the nutritional needs of growing populations, too low to allow the agricultural sector to contribute substantially to overall economic growth, and too low to offer hope for an improved future to the millions of subsistence farmers saddled with present inequities.

Progress towards the attainment of acceptable rural living levels for the mass of the world's farm population is grossly unsatisfactory. Failure to improve substantially these levels of living tends to increase migration to the cities, creating new influxes of the discontented upon already smoldering urban frustration and preventing the settlement of new lands and the acceptance of modern techniques of agriculture production on the farm.

Early U. S. efforts to improve agriculture in the LDCs were directed primarily towards the transfer of the techniques of production. These techniques resulted in increased yields, but markets were unreliable, inputs often expensive, credit limit and farm prices low, thus expected profits did not generally accure. Recent improved analyses of the total economic and social environment offer much broader understanding, more viable approaches and new mechanisms by which an economic environment can be established in which agricultural progress is possible and the technology truly useful.

III. Constraints and Opportunities

The physical character of the agriculture of any country is largely shaped by the character of the land forms, soils and climate of the region, but what happens within the constraints imposed by physical characteristics is closely related to economic, social and political as well as agronomic forces and the relative balance between these forces. It is the first premise of technical assistance that these forces as well as some of the physical features are alterable, that by deliberate but careful adjustment, both the direction and pace of agricultural development can be changed, and that the economic, social, and political costs of such alterations need not be excessive.

Changeable though these factors are, there remain the constraints imposed by the very nature of the typical agricultural system--which is large, ponderous, geared to biological and seasonal climatic forces, made up of thousands of widely dispersed units and controlled by the most conservative and least literate segment of the population. Because of the nature of these systems, little that is positive can be accomplished by force, quotas, penalties or other such uses of government authority. Even under the most carefully controlled conditions of a police state, these measures have resulted in disappointing output, and sometimes in agricultural chaos and governmental frustration. The second premise

of technical assistance in agriculture then, is that the system must be led or pulled, not forced nor driven. There exists a diversity of tools that can be used for leading or pulling the agricultural sector towards desirable change, some of which can be used or influenced by technical assistance. Others require political action enlightened by adequate knowledge of how the agricultural system works.

IV. Farmers' Decisions

The farmer's choices, among alternative production activities, are influenced not only by customs and habits carried over from the past, but by the incentives and opportunities to improve income and social situation and by the risks associated with these opportunities, as he/she sees them. As stated in the first premise above, many of these factors are alterable. Thus, technical assistance in seeking to foster constructive change, should concern itself with the environment of incentives and opportunities for productive activity and the concomitant risks that face the individual farmer. Improvements in incentives and reductions in risks exert the pull on which the second premise is based.

The adjustable components of this environment are primarily the set of government policies affecting agriculture and the set of institutions providing services to agriculture. For example, a price policy change can provide the farmer with an incentive to produce, but she/he may not be able to respond to this incentive without access to adequate credit, and the technical, marketing, risk bearing or other services that he/she needs.

In any case, what happens in agriculture in nearly any country, is the sum or total of the effects of hundreds of thousands of farmers' decisions. The farmer hopes that the decisions she/he makes will be to her/his greatest economic and/or social advantage. Her/his government and A.I.D. hope that the decisions she/he makes will be to the advantage of the country's economic and social development. Our role is to foster the selection of choices in such a way that when the farmer makes the decision that is best for her/him, it is also likely to be best for the development of the country in which she/he lives. This is the essence of helping the agriculture sector to adequately feed a growing population, contribute significantly to overall economic development and hopefully result in a better life for the people of the LDCs.

V. Agriculture Sector Analysis

An agriculture sector analysis is essentially a detailed study of agricultural production, distribution and utilization systems, the major components of such systems and the many factors influencing these systems. A thorough understanding of the components of an agricultural sector is necessary for the setting of realistic goals, the formulation of

acceptable strategy, the development of workable plans and the structuring of implementing activities. A sector analysis, systematically applied to reasonably accurate data, should describe the main components of the agricultural sector, the relative health of the components, how these pieces fit together, how they interface with and influence each other and the sensitivity of agricultural systems to intentional or naturally occurring changes in components or factors. Also, the analysis should indicate the degree, timing and location of changes required to achieve selected goals.

Strategy formulation and planning, if they are to be truly meaningful, ought to be based on rather comprehensive in depth analysis of the sector one hopes to influence. Detailed analysis of the agricultural sector and the relationship of this sector with all other sectors in the economy are universal needs in developing countries. Interaction among and interfaces between the various components of the agricultural sector need to be evaluated by interdisciplinary groups that can bring to bear broader understanding than that provided by specialists in the many components involved in the flow of events from original inputs, through production to eventual marketing and utilization. Although such sector analyses must be closely oriented to the specific country involved, there is a universal need for this type of approach in all developing countries. Historically, where assistance groups have failed to promote effectively continous improvement in agriculture over time, there has often been a failure to do enough analytical work to be able to predict the probable rate of development or response and to plan and decide what to do when certain progress levels have been achieved. That is, the sporadic successes that are regularly achieved and followed by a decline are usually based on incomplete system analysis.

Institutions or subsector analyses do not appear to be adequate bases for selection among various program alternatives within or among sectors. Criteria and measures which are broadly meaningful and which allow comparison of projects and programs must be developed. Intersectoral and sectoral analyses and planning should provide a fairly complete staging of inputs and outputs which permit tracing actions and responsibilities through the system in order to rapidly isolate lagging elements and provide timely remedial action. The full application of evaluation as a management tool is only possible within such a complete system. Effective management also requires that at each management level, the manager is able to view his own stage in relation to the stages that feed him inputs and those which are consumers of his outputs and to understand the overall relationships and implications of his actions. Flexibility must be built into the system to permit the manager to detect probable lags and shift resources intelligently to obtain essential outputs within the time limitations and to request and obtain additional resources or to alert managers at the appropriate levels of anticipated lags so they can modify their targets or take other appropriate action.

This whole process depends heavily on a thorough understanding of the way the agricultural sector works; the internal and external mechanisms involved, the state of development and general health of the many interrelated components and the effects of policies and practices exercised by the government. A thorough sector analysis should provide this fundamental understanding upon which strategy and planning depend. Of all the functions carried out by assisting agencies in the developing countries, this one has received least attention, yet no better method has been found for placing in perspective the entire complex of agricultural systems, to identify problems and plan corrective action at important points in the economy.

The general principles of how to conduct such analyses so as to achieve an unbiased and factual evaluation of the agriculture sector, are now generally known and the techniques, methods and procedures for carrying out a sector analysis are now being better defined and more adequately structured.

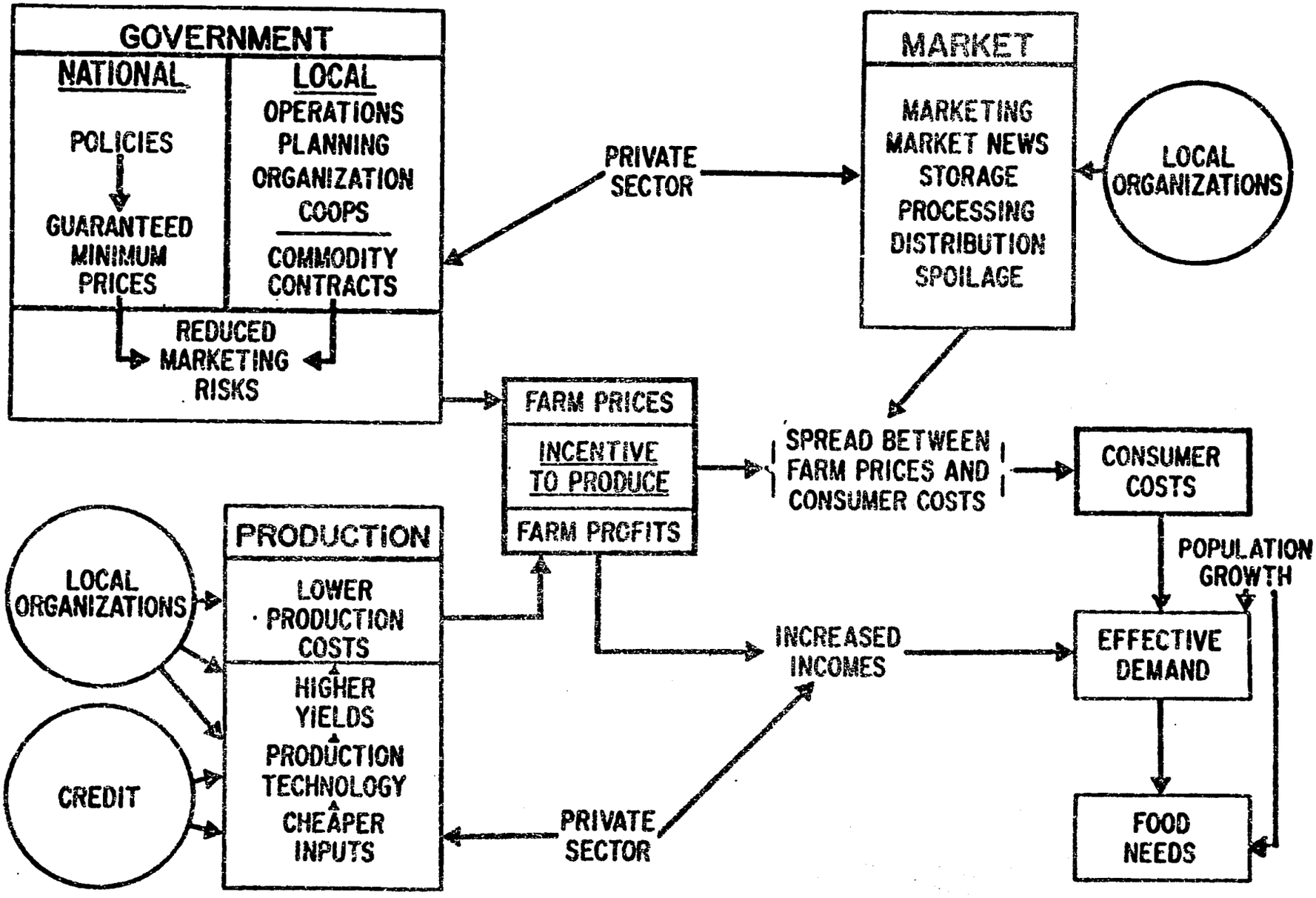
The level of sophistication of a sector analysis can vary form quickie type studies of a few weeks' duration through more comprehensive analyses lasting a few months--at least through one crop and marketing season--to one- or two-year very thorough and detailed studies made by a multi-disciplinary team of experts assisting host country analysis teams. The ideal is a never-ceasing study that continuously upgrades and improves the analytical work, based on a constant stream of new data. The type of analysis decided upon for any one study depends largely upon (1) the kinds of information needed for the level of strategy and planning contemplated, (2) the nature of commitments to be made based on the study, (3) the time available for the study - or its degree of urgency, (4) the number and competence of analysts that can be supplied by the host country, (5) the organizational structures from which these analysts are drawn, and (6) the funds available for the study. A very special problem exists particularly for small countries having inadequate numbers of trained analysts, no organized analytical institution, very little available funding and an urgent need for a sound planning base.

The developing countries ordinarily do not have adequate numbers of trained agricultural economists to carry out sector analyses, identify the most useful development strategies, provide adequate planning, encourage helpful policy formulation, structure improved marketing systems and economic research and to work with production specialists in improving inefficiencies and profitability in farming systems. This problem of a low agricultural economics capability often prevents adequate analysis of LDC problems, allows poor choices among alternatives to go unnoticed, creates distortions in programs where interactions are critical and may make the selection of conditions precedent to sector loans difficult or awkward.

VI. Simplified Systems

Many countries do not have the resources for, and may not really have the need for, highly sophisticated detailed studies and simulation models in order to do adequate planning. Yet failure to understand the agricultural system or the inability to estimate adequately the sensitivity of the system to specific changes in any of its parts, usually results in a hodgepodge of more or less unrelated projects, each good in themselves but not adding up to an integrated program. Other projects fail to achieve their goals because of undetected factors elsewhere in the system that prevent success. What is needed is a simplified systems approach that would allow planners to consider a large number of variables and their interactions simultaneously. In this way, bottlenecks can be more readily identified, knowledge and action gaps surfaced, interactions estimated, institutional or organizational deficiencies pinpointed, and alternate pathways considered. A very simple and highly generalized flow chart, Figure 1, shows the central components of an agricultural system. This chart is a bare skeleton since each block on the chart could be enlarged to represent another system but a simplified form is adequate for this discussion.

Starting in the lower right-hand corner with the block labeled food needs (underlined phrases or words refer to items on the chart), we have a block that is easily calculated for any given country. All the data needed is the number of people in the population, the rate of population growth and the amount of food considered an adequate diet for the region. This number is often frightening large and has people and governments worried because it is larger than food production in many countries. It is often large enough to made government officials reassess their doubts about Malthus. The block labeled effective demand represents the amount of food the population can afford to purchase; a measure of the size of the market. Effective demand, particularly in a hungry country, is smaller than food needs. If farmers produce up to the need level and throw this production on a market (effective demand) that cannot absorb it, then this "over-production" works its way back through the system to farm prices. Farm prices fall, the incentive to produce is reduced and the farmer retreats to subsistence agriculture because he has no other alternatives--precisely what we are trying to avoid. If consumer costs are held down by government policy (often done to maintain peace in the urban areas) the same thing happens to the farmer. That is, sooner or later farm prices and farmers' profits decline and with it his production incentive. If attempts are made to get farm prices up in order to increase production, eventually this is reflected in higher consumer prices, which in addition to being politically explosive, lowers effective demand. This sets a more effective ceiling on production than a lack of production technology. So we have a seesaw effect. If we try to help the farmer and her/his incentives, we hurt the consumer and demand. If we try to hold consumer costs down to get demand up, we hurt the farmers' incentive. And we must have both--i.e., there must be a strong incentive to produce and a demand for the product or production will not increase above subsistence levels.



Milo L. Cox, AID/W

A-115

One of the most workable ways to break this impasse is through the marketing process. There is usually a large spread between farm prices and consumer prices. If efficiencies can be achieved in the marketing process, then large savings can be achieved in the price spread. If policies are such that a part of these savings can be allocated to the farmer and part to the consumer then incentive to produce and effective demand can be increased simultaneously. In the market block on the chart there is a list of some of the factors that can usually be improved. If market news can be made available to the farmer so that he knows the value of his commodity before he barters, if storage facilities are available for that production which cannot be sold immediately, if items can be processed for sale later, if distribution is faster and cheaper, if spoilage can be reduced then the spread can be reduced. Middle men, multiple transfers and sales taxes on transactions contribute to large price spreads and much can be gained by efforts to increase efficiency in this area. Paradoxically the middlemen-shippers, warehousemen, wholesalers, retailers, etc., are the only organized group in the marketing process. Farmers rarely know what prices the ultimate consumer pays and the consumer is usually not aware of what the farmer receives. The people who work in the price spread area are wonderfully adept at soaking up efficiencies achieved at either end of the marketing chain, i.e. if production costs are reduced making lower commodity prices possible, this is rarely reflected in decreased consumer costs. Conversely, when consumers must pay higher prices, this almost never results in higher prices to farmers. Government intervention that would increase competition in the marketing area usually pays big dividends in farmer incentive and consumer demand, both prime requisites for increased production.

The Government block has been divided arbitrarily into a national government that sets policies and a local government that is more involved in local planning and organizations. On the national government side a single policy, guaranteed minimum prices, is used as an example only. Any one or group of policies could be included or substituted for this one. Guaranteed prices does not mean a subsidized nor necessarily a very high price. It is intended as a floor or minimum price. This reduces the farmer's marketing risks and gives him confidence to purchase the inputs required to get high yields. The problem with this procedure is that it is difficult to decide on which policies would give the best results and it is often difficult to get traditional policies changed even when they have become disincentives to investment in the agricultural sector. Policy changes are often politically difficult for governments to make. Lending agencies usually write policy changes into loan requirements but often write in many conditions or insist on policy changes that really do not have much effect. That is, unless the lending agency has gained competence in estimating the sensitivity of the production system to various policy changes, they are not yet prepared to write wisely the conditions precedent to the loan. A systems approach should minimize this difficulty.

On the local government side, the most important factor assisting farm income is where private sector processors offer farmers contracts

for their production, at prices agreed to prior to planting, if the farmers will meet processors' requirements for variety, quality, etc. This is already working well in many countries for certain products, but it is usually helpful only to those farmers near the processing plant. The basic principle, however, is the same as the Government-backed guaranteed minimum price program. Both of these should tend to raise farm income and production incentive.

The production block is where most assistance agencies have put major emphasis. Here we expect the private sector to provide cheaper inputs to farmers. This, added to the production technology coming from the experiment stations give higher yields at lower per unit cost of production. This gives increased farm profits without price changes. This process is a powerful tool in getting production incentives up without increasing consumer prices. The whole system then is geared to getting consumer demand up without reducing farmers' prices or getting farm prices up without killing of the demand, or some desirable mix of the two.

If the private sector earns profits selling inputs to farmers, and they must, then this is reflected in somebody's increased income which is a major factor in demand. Farm profits increase demand also, mainly for commodities other than food, but it is surprising how much processed food is now sold in many rural communities. We have now come full cycle on the chart. When the system is working fairly well, we expect:

1. Farm prices to improve
2. Production incentive to increase
3. The price spread to decline
4. Consumer costs to decline, remain stable or increase more slowly than income.
5. Effective demand to approach food needs--the basic goal.

Now we come to a seeming paradox. Almost everywhere in the LDCs we encounter markets full of food. In the face of real hunger, much food is for sale and it is mostly food of local production and it is almost never all sold. This means essentially that the farmer has always traditionally produced up to effective demand and he is still doing so today. Actually, because there is a large spoilage component in storage and in the wholesale and retail markets, the farmer is producing above effective demand by the amount of this spoilage, minus imports. Anywhere you travel, even in remote villages, if you have some money you can buy food. It is very true, however, that if all of the people had enough money to buy all the food they wanted, the local markets would run out quickly, but there is nearly always enough food to satisfy effective demand. Farmers know that they only drive markets down when they produce more than they can sell, so any program that pushes increased production without getting demand up is likely to fail.

If the farmer has always met effective demand, how was this possible? Generally, it has been possible because demand has always gone up slowly. Population growth and increased incomes both tend to make demand go up (and they are both occurring all over the world) but spiraling consumer prices depresses it. The resultant vector is a very slow rise

in demand and a primitive agriculture can change fast enough to meet this slow demand rise. Farmers have traditionally done this by, (1) increasing the land cultivated or, in their own limited way, (2) increasing the intensity of their agriculture. They have not generally gone the route of purchased inputs and high-level technology where quantum jumps in production are possible, basically because it has not been profitable. Today they have about used up these two ways of increasing production. More land is available in some areas, but it is remote and not economically available to the farmers. They cannot intensify much more without resorting to the cash cost inputs of fertilizers, new varieties, pesticides, etc. Therefore, if effective demand for food should take off under the impetus of population growth and increased demand for food should take off under the impetus of population growth and increased incomes, then a primitive agriculture would no longer be adequate, and means would have to be found to make new lands available to the farmer or increase his profits to the point where he could afford technical inputs (or some mix of the two).

The system then is like a heating system that pumps hot water to all the rooms in a house. It's a continuous system and any restriction anywhere in the house reduces the flow. The problem may be upstairs, downstairs, in front of the pump, behind the pump or in the furnace, but a restriction slows down the whole system. If it were a complete stoppage, the limiting factor could readily be located, but it is rarely so in agricultural systems. Different parts of the system may work well or poorly a at different times, so a mechanism for locating bottlenecks that are not obviously apparent is necessary.

There is nothing really new in this system. All of the items have been discussed for years. This approach is simply an attempt to organize the major factors in such a way that the effects of each part and the possible interaction between parts become apparent. Analysis of the agricultural sector along these lines should show where major effort is required and should tend to concentrate resources on the most limiting factor. This is particularly important because there are not usually enough funds to work on all the various parts at once. As soon as the most limiting factor has been identified and progress is being made towards a solution to this particular problem, then attention can be directed at deciding which factor will become the most limiting once the first one has been solved. By this process an order of priority can be established.

Of course this chart must be altered to fit conditions in any specific country. In its present form it is so generalized that it may omit factors peculiar to a given country. For simplicity many factors have been omitted but are implied. Research must be applied at several points, particularly to production and marketing, extension activities fit between the production block and the farmer, land tenure problems could be attached as a policy problem, etc. until the chart fits the country of concern to the planner. This approach is simply a plea for

orderly thinking about a food problem It is no panacea nor is it a substitute for careful analysis, thoughful strategy formulation and detailed planning. It is a tool that should facilitate these activities.

Attachment: A Proposed Development Sequence

A PROPOSED DEVELOPMENT SEQUENCE

A.	Data	- What do we know? What are order of magnitude? How are data collected? How reliable? Are there gaps?
B.	Analysis	- What is the data trying to tell us? What does it really mean to people? Where are we? What do we have to work with? What can we do?
C.	Goals, Objectives, Purposes	- Where do we want to go? What are we trying to achieve? What is the purpose of outside help?
D.	Assessment	- Is C realistic? Overstated? Understated? Are there reasonable ways to get from B to C? Can they be financed? Administered?
E.	Essential Steps (Strategy)	- What are the major things needed to be done to reach C?
F.	Planning	- What are workable methods and means? What kind of a plan is needed to accomplish E?
G.	Organization	- How do we set up a system to make A through F a continous operation and to accomplish E by carrying out F?
H.	Implementation	- Put F in motion, administered by G.
I.	Evaluation	- Is H going ahead? Are G and F working? Are we headed towards E? Will this lead us to C in a reasonable time frame?
J.	Feedback	- Has I revealed errors or indicated a waste of resources which we do not want to repeat? Or success we do not want to repeat? Or success we do want to repeat? Feedback I information to A through H to upgrade system.

WOMEN, PERIPHERIES AND FOOD PRODUCTION

Elise Boulding

The recent United States National Research Council World Food and Nutrition Study (interim report, 1975) highlights two contradictory approaches to the world food supply. The National Research Council vision, on the one hand, is that the scientific know-how of the U.S. will enable each area to specialize in certain foods optimal for that region, using the most advanced technology, and that world trade will take care of the distribution of that food to individual mouths. This approach is not contradictory to the concept of the New International Economic Order. The promoters of the NIEO see high-productivity technologies associated with large-scale farming as important. What will guarantee that present inequities in food availability are removed is that the terms of trade will be altered to give the third world returns from the world markets comparable to the returns of the first world. Both groups are relying on center strategies for improving the lot of the world peripheries. When the World Bank tries to persuade recipient governments to bring in proposals designed to help subsistence agriculturalists, they are also relying on center strategies: First and Third World Center experts will design the new practices of subsistence farmers.

A contrasting periphery strategy is the Gandhian approach of village self-sufficiency. Not all periphery strategies are Gandhian. This is simply taken as one example. Food should, as far as possible, be grown where it is eaten, is the basic postulate. Surprisingly, one working group within the National Research Council Task Force also came to that conclusion, recommending that technologies be aimed at a variegated local food production and that mass transport of food be avoided as far as possible. Post-harvest losses and fuel costs are both minimized in this approach. Also, this gives periphery peoples more control over the conditions of their lives. They are less dependent on their own cities, let alone the first world.

This autonomy-of-the-periphery approach fits in with the new concept of the basic needs strategy (United Nations, 1976) which says that development progress should be measured by the improvement in the life of the poorest, not by GNP growth rates or urban standards of living. Since the basic needs strategy requires finding ways to put resources in the hands of the invisible poor, it is not very popular with third world governments that want tangible urban evidence that they are modernizing. Nor is it popular with first world experts who know better than the poor what is best for them.

122

The center-periphery analysis was first used earlier in this century to draw attention to the inequities between the have and have-not nations of the world, and was subsequently extended to apply to the analysis of any social aggregate characterized by uneven access to resources and social power. Along with the dependencia model of the development of underdevelopment, it has thrown a great deal of light on structural characteristics of the world economy which prevent a more even development of the potentialities for human betterment of countries with different levels of industrialization. Yet the center-periphery model itself has unintentionally reenforced the center in both the first and third worlds, reenforcing stereotypes of periphery peoples which make it rational to keep them dependent. Engels' perception of the Lumpenproletariat as the scum of the depraved elements of all classes - the worst of all possible allies, absolutely venal (quoted in Cockcroft et al, 1972:296,7) still lurks at the back of many a radical intellectual's mind, even if not consciously thought or expressed. This means that the perception of the periphery as a major resource in development of any country has not evolved, either among establishment or dissident thinkers and leaders. The periphery are seen as the center's burden, not as its resource; the object of aid, not the initiators of new directions. The result of this is that inappropriate modernization programs remain intact, whatever the political ideology of planning regimes, in spite of growing recognition that such programs tend to leave the poor and the subsistence sectors worse off than they were before.

The costliness in fuel of industrialized agriculture makes it unfeasible to continue modernizing with old fuel-squandering agricultural technologies. Latecomers to modernization such as Japan have already mastered labor-intensive fuel-economizing techniques for increasing agricultural productivity (Nair, 1969), but the third world has preferred the U.S. industrial agriculture model. Questions regarding the costliness of the U.S. model have only recently been raised in the U.S. (Pimental, 1973). The dawning realization of the costs of industrial agriculture and the potentials for productivity of new approaches to labor intensive practices opens up a whole new perspective on world agricultural productivity, particularly on the potential productivity of the world's periphery - its subsistence farmers. It particularly opens up new perspectives on the future of the poorest of the poor at the periphery - women subsistence farmers.

Elsewhere I have called these women subsistence farmers the fifth world, those members of the third world who "breed babies, produce milk to feed them, grow food and process it, provide water, fuel, and clothing, build houses, make and repair roads, serve as the beasts of burden, and sit in the markets to sell the surpluses." (Boulding, 1977:111). They are the excluded ones. No new technology ever serves their production needs. Modernization has increased their work load to the breaking point, with no relief in sight. Their only resources are the extra hands they breed. Whatever meanings inhere in the concept of the

periphery, can best be probed in depth by looking at the situation of women.

In the following exploration of obstacles to the development of the periphery potential in the third world, I will begin with a theoretical examination of the center-periphery model itself. This will be followed by an examination of periphery potential as presented in some dissenting writings on modernization. Concluding evidence for the "periphery potential" however will come from an examination of the productive roles of rural women in four nations from one of the poorest of the world's peripheries, South Asia. It will be argued that an adequate food supply fully available to the poor in any country, and particularly in the third world, will depend on abandonment of periphery stereotyping regarding rural areas. This abandonment will depend more on the mobilization of the periphery itself than or the behavior of the center. The role of the intellectual in this process is probably far less significant than has been thought since the intellectual - usually male - has little opportunity (or inclination) to gain an understanding of the skills of the periphery - particularly the female periphery.

I. Obstacles to the Development of Periphery Potential

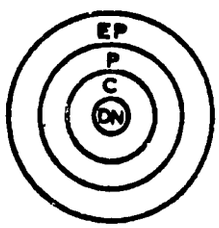
As suggested above, the obstacles to periphery development lie in part in the very conceptualization of the model itself. They also lie in the perceived interests of third world leaders at the centers of the peripheries in maintaining existing linkage patterns with metropolitan centers, and in part in the antilocalism of modernization theory. The three obstacles will be discussed in turn.

A. Effects of the Center-Periphery Model

1. The Model Discussed

The Center-Periphery model as elaborated by Galtung, applicable both at the national and international level, postulates a continuum of social positions from the decision-nucleus (DN) at the center to extreme periphery (EP) rather than a series of discrete classes as in the Marxist model. Figure 1 presents this diagrammatically.

Figure 1



The model is essentially dichotomous in spite of the continum of social positions, since it divides the world into centers and peripheries. The dichotomy can be applied, however, to any subsystem within the world system. Thus the periphery also has its center-periphery relationships. As Galtung summarizes it: "The social center occupies positions that are socially rewarded and the social periphery positions which are less rewarded and even rejected". (Galtung, 1964 pp. 207-8). As van der Veer further elaborates: "the structural differences between the center and the periphery are that the center ranks higher in social participation, in knowledge and in opinion holding than the periphery. New ideas are normally created in the center, in the establishment and the anti-establishment, and are then communicated to the periphery which usually accepts them a long time after the center, sometimes even when the center is not concerned with them any longer...Therefore the periphery can be expected to be often in favour of the status quo, since it will be hard to abandon just accepted and internalized ideas." (van der Veer, 1976, p. 622).

The respective social characteristics of the ideal typical center and periphery persons are, as deduced from van der Veer:

a. Social Position

For the Center: urban location, superior position in tertiary occupation; male sex, highly educated, in middle years of life, earning high income.

For the Periphery: rural (or urban slum); unskilled occupations in primary sector; female, (since the ideal center person is defined as male, the ideal peripheral person clearly has to be female.) minimal or no education, under 21 or over 55, with a subsistence income.

b. Cognitive Orientation (based on Rokeach scale. (Rokeach, 1960)).

For the Center: open-minded, high ambiguity tolerance, non-authoritarian, can incorporate new ideas easily, has long time perspectives.

c. Social Participation

For the Center: high on giving and receiving information, making decisions, high scoring on social participation index (active member of a number of organizations, including political organizations, serving on boards, etc.).

For the Periphery: low on giving and receiving information, making decisions, further handicapped by few or no organizational memberships, no political participation.

The items listed above compose an additive social index that can identify an individual's position on any given social-periphery gradient. Periphery persons are seen as victims of insufficient communication and isolation which produces moralistic, absolutist thinking, an inability to make differentiated evaluations of complex situations, and pessimism. Research applications of this schema to a study of supporters of disarmament, and of members of a world peace through world government movement, (Larsen, 1976: 421-440; Skjelsbaek, 1976: 475-502) lead to the conclusion that periphery people are low in knowledge, dogmatic and absolutist in thinking, unable to make appropriate differentiations on matters of foreign policy and, particularly in the case of women, excessively and ignorantly enthusiastic about peace.

2. Reactions of Planners

Both capitalist and socialist planners from the Center, even with the utmost good will toward the periphery, if they have this kind of model in mind, must inevitably conclude that change must come from the center. The obvious way to improve the conditions of the periphery in this model is to speed information flow from center to periphery and to ensure that both groups are operating on the basis of the same information, so that the periphery will want what the center is planning.

Third world leaders and planners, operating with the same kind of model, are likely to conclude that it is to their advantage to keep open the special pathway between their strategic location at the center of their respective peripheral countries and the first world centers, while keeping the gate closed to further diffusion within their own societies. Who could make better use of the information and resource flow from first world centers than they? This results in westernized life styles for themselves and for the modernized sector they develop within their country's center, while the claims of their own peripheries are treated to a firm paternalistic denial on the grounds that the center must first prepare them through education.

3. Reenforcement from Modernization Theory

Modernization theory reenforces the behavior of both western planners and third world officials for two reasons; (1) modernization theory, whatever the ideology, is fundamentally anti-localist, being based on the assumption that all innovation and progress depends on the concentration of knowledge, competence and resources in urban centers, to be distributed according to the perceptions of those centers

concerning the needs of the rest of society. (2) Since GNP is the primary measure of economic development, planners are generally unwilling to consider programs that involve redistribution activities that will not register in economic growth rates. Socialist planners sometimes prove an exception to this rule. Some socialist countries, at certain stages of development, have been willing to sacrifice growth rates to redistribution policies (China is the most notable example, Dernberger, 1977).

4. Theoretical Correctives: Models of Periphery Withdrawal

Center-periphery theorists have not been unmindful of the dangers in the center-periphery model, and have developed various concepts of periphery withdrawal to deal with them. The withdrawal concept assumes that it is domination from the center that keeps the periphery from developing its own potentials, and that conscious cutting off of interaction with the center will give periphery societies of breathing space, an opportunity to develop their own thwarted capacities. They are to trade with one another and develop a variety of cooperative knowledge and resource-sharing strategies, creating an interdependency among themselves as equals-in-peripherality, in order to build up their individual and corporate strength independently of the center. In that way they will enjoy autonomy and self-respect, pursuing economic development according to their own potentials, and later be able to meet the former center as equals in political and economic status. Two scholars have proposed world models based on such a withdrawal/subsequent-return-as-equals: Galtung (1975) and Kothari (1975).

II. Potentials of the Periphery

The most cursory examination of periphery countries points to the absurdity of the center-periphery analysis as presented in the first section. China, Ethiopia, and some Arab states, to mention the most obvious, all represent cultures with between two and four thousand years of more or less continuous historical experience as polities behind them. There was no Europe as we know it to participate in the Mediterranean-centered world trade of 3000 years ago. Every economic, political and social problem-solving device tried in the European West in the past 200 years was tried long ago in China, as any student of Chinese history knows. Physical technologies relating to conservation of water and soil; sylviculture, pisciculture and agriculture; high-density building construction in hot climates, including sanitary systems and air conditioning; "factory" production of cloth and artisan products; these were all in an advanced state of development two thousand years ago. Subsistence societies, both settled and nomadic, outside the civilizational

clusters, also had highly developed technologies relating to their economic, civic and social needs.

Some of these technologies are today lost arts. Others are still available or recoverable. The social and physical technologies of so-called periphery countries are beginning to be perceived by some in the third world as their most valuable resource, even while western-trained technical planners are still busy uprooting them and replacing them with fuel-expensive technologies of the West. From this "new" third world perspective, the periphery thus turns out to have reservoirs of competence, technologies and resources that the West, and also city-bred third-worlders, know nothing about. The appropriate technology movement in the third world is aimed at recovering and further developing traditional "periphery" technologies, and new technologies utilizing labor-intensive approaches. The Human and Social Development Program of the UN University is administering several projects along these lines. One is located in the Marga Institute of SRI Lanka, another will be administered by the Colegio de Mexico in Mexico. Third world scholars looking at their own traditional civic cultures are also pointing out the uses of "periphery" political mechanisms that can produce social innovation in a style more appropriate to a non-industrial society than western political innovations.

What is clear in looking at any periphery culture, civilizational or isolated rural or tribal, is that (1) there are valuable time-tested physical and social technologies geared to a particular society and its environment of which western development experts are ignorant; (2) even the simplest traditional society has far more complex social structures and rules than have been ascribed to it; more complex societies are already federations of widely diverse cultures and have worked out patterns for dealing with that diversity; (3) earlier practices of resource conservation and distributional equity were destroyed or distorted for many societies with the advent colonialism and can therefore no longer easily be recognized; (4) a high level of suppressed conflict engendered by colonial contact and/or occupation has absorbed an enormous amount of social energy over the past several hundred years, and has prevented many periphery societies from developing along indigenous paths they might otherwise have taken.

These insights are not new. A 1954 UNESCO conference on development foreshadowed the recent rediscovery of traditional and appropriate technology (Meynaud, 1963). A 1958 conference on the role of women in development even noted the importance of women's knowledge in the development process, though in suitably muted fashion INCIDI, 1959). The time was not then ripe for such messages. Now, the time is ripe, and theoretical and applied community development models are converging on a rediscovery of the potentialities of folk knowledge, the survival knowledge conserved at the periphery.

A major theoretical contribution to the understanding of the potential of the periphery comes from Berenice Carroll's re-examination

of the cult of dominance and power (Carroll, 1972). She calls attention to a different kind of power from the power to dominate, which is after all the major power the center has. She points to the power of competence, which is an overlooked type of power the allegedly powerless have. This competence derives from an intimate knowledge of the local social and physical terrain and skills of mastery of that terrain, from skills of communication and coordination and skills of selective noncompliance developed for survival at the periphery. This terrain and its mastery, these skills of communication, coordination and noncompliance, are all unknown to the center until it is confronted with an unexpected mobilization of the periphery in a mass movement. The periphery is also a vast reservoir of human emotion - emotions denied at the center. Anger and love alike flow from periphery to center. Affect rarely flows the other way. To stand the center-periphery argument on its head, it could be argued that it is the center that is truly helpless, for it does not and cannot know the society it governs, and depends on the most precarious of structural arrangements - really only a set of myths about the social order - for its continuance "in power".

A common example of the helplessness of a modernized center vis a vis its own periphery comes from a reference to the British colonial court system proudly installed in all colonies. The reference involves a comparison of that court with the traditional panchayat of India (Madan in Meynaud, 1963:112-3). An Indian villager explains to a visitor that in a court there is no reason to speak the truth. It is "simply an affair of parties". At the panchayat however, no one speaks falsely. "How could a man venture to tell a lie before his brotherhood?" It is at the panchayat that village problems are finally dealt with and justice administered. Needless to say, colonial officials only entered the courts, never the panchayat, so they never really knew what was going on.

Another theoretical perspective on the periphery comes from a recent collection of development studies by predominantly third world scholars (Eisenstadt, 1974). These studies are addressed to the issue of what traditional societies "know" that is relevant for development, and give strong support to Carroll's position on the competence of the periphery. Example after example is given of how traditional "periphery" structures are able to carry out changes that modernizing centers could not manage because they lacked the knowledge of how their own societies worked. Most of the societies discussed are Islamic societies, so the book is in a way a compendium of mechanisms for social innovation within traditional Islamic social structure.

From the pragmatic community development side, comes a rediscovery of the value of traditional village structures for innovative problem-solving. The new localist "basic services" strategy turns out after all to be what local village councils always did, drawing on local resources to solve local problems. No central government has ever been able to create local resources, only at best to link with them and bring new inputs for local redevelopment. The well-known conservatism and resistance to change of local leaders are beginning to be recognized as

indicating criteria that have to be met, conditions that must be satisfied, before sound innovation can take place.

III. Women as Periphery: A Special Knowledge Stock

To repeat, women are the periphery of all peripheries. We noted this first in exploring the ideal-typical characterization of center versus periphery, in which the center was labelled male and the periphery female. This tends to be true in the third world too, although the status of women varies more in nonindustrial countries than in industrial countries. In countries where the traditional status of women was high, westernization lowers it. The initial phases of development rarely increase recognition of the role of women in a society. This means that even third-world initiated studies of indigenous technology are still likely to fail to capture critical techniques passed on from mothers to daughters over the years. Women's special knowledge stock relates particularly to the six following areas: (1) life-span health maintenance, including care of children and the elderly; (2) food production, storage, short and long-term processing; (3) maintenance and utilization of water and fuel resources; (4) production of household equipment, including often housing construction; (5) maintenance of inter-household barter systems; (6) maintenance of kin networks and ceremonials, for meeting regularly recurring and life crisis events. While only (2) relates directly to food, all six factors contribute to the adequate nutrition of a community. (6) is particularly important in ensuring food-sharing over great distances in times of food shortages or famines, and the extended-kin/ceremonial complex is one of the first to be destroyed with modernization.

I know of no proposals to study the whole complex of women's technologies as listed above. In general, it may be said that much valuable food-related technology is lost because it is in the hands of women and is not treated as a subject worthy of study by development specialists. This is true of all technologies at the periphery, whether in the hands of men or women, but far more true for women. The idea of technology substitution is so central to the technical assistance field that critical evaluation of traditional technologies, in order to promote, modify or replace them entirely according to their suitability to the social and physical environment in which they are found, has only recently begun, and then primarily as an initiative of third world development centers.

IV. Obstacles to Technology Maintenance and Technology Improvement for Women

The most traditional technology of all, in every society, is the social technology of the division of labor which leaves woman with the most labor-intensive responsibilities of child and food production, and which defines her role as one that does not require tools. Within the social limits assigned to them, women have been very inventive in the

development of skills and resources for community maintenance. Much of that knowledge stock needs to be preserved because it represents the most economic and adaptive use of time, energy and resources available. Much of it needs to be modified and improved. Unfortunately this is usually done by taking the task away from women, or giving them an unsuitable urban-based substitute technology for the task. What is most urgently needed is to begin to define women as tool-makers and tool-users - which they have always been - and to start giving them the training and resources that will enable them to redesign their own tools. This they have rarely had the opportunity to do. They know their requirements better than male designers, who do not know their tasks and daily work pattern.

The technologies of the periphery are by no means always ideal. Some are lethal, and need not to be improved but replaced. One important meaning of human and social development is the progressive ability to evaluate critically one's activities and to modify them according to one's values and goals. Rural women's double work load has always worked against this critical evaluation process, because they have less time to reflect than men. Women the tool-maker will also become woman the reflecter; tools and leisure for reflection each beget the other once social and environmental conditions permit. This creative cycle - already begun for men in places where traditional technology is being carefully studied, must also be made to include women. What is happening instead, all too often, is that outside agents offer substitute knowledge, frequently inappropriate, rather than ennabling women to develop their own. Following is a survey of the areas in which women need to evaluate, develop or reject their own technologies, and where they are subject to retrogressive pressures by would-be experts.

A. Life-span Health Maintenance

Women provide from their herbal knowledge the pharmaceutical stock, gathered in woods and fields, which under conditions of traditional population density were often adequate for family health maintenance over the life span. Some "knowledge" was harmful, contributing at times to malnutrition of pregnant and lactating mothers (for example, some of the practices relating to the humoral theory of "hot" and "cold" foods). Contraceptive lore and herbs easing childbirth appear to have been frequently effective. Prolonged breastfeeding appears to have been particularly effective both nutritionally for the infant and as a supplementary contraceptive for the nursing mother. Many family and community rituals contributed to "psychic health" and could be labelled preventive medicine, although having no specific physical effects. Modern medicine, strictly curative, has insisted on replacing all traditional health maintenance knowledge, including (until recently) breastfeeding, with laboratory-generated technology. Health reports of third world governments indicate the value they place on family-administered health care by making such statements as, "the majority of the population has no health care".

B. Food-related technologies.

Until recently, women have been prevented from interplanting in their garden plots whenever experts could intervene, because it was considered a retrogressive practice. Now it is found to be a safeguard against vagaries of weather and insects, and guarantees a certain minimum productivity for a field, instead of the possibility of a bumper crop at the risk of complete crop failure. In some countries, efforts are still going on to make women stop planting manioc and replace it with more "protein-rich" crops even though the most recent studies indicate that manioc is the best crop for many poor soils, that the replacement crops often serve nutritional needs poorly, and that traditional cooking practices make manioc more protein-rich than urban nutritionists realized. (April, et al, 1974).

A comic if isolated example of the failure of the modernized sector in a developing society to recognize the value of traditional wisdom, comes, for a change, from the first rather than the third world. The example is the porridge war of the 1880s in my own native country, Norway. It carries extra significance as an illustration of how dangerously easy it is for a modernizing elite to dismiss the folk wisdom of women. The traditional way for the Norwegian farm wife to prepare porridge was first to cook it up on the stove, then remove it from the fire and throw in a handful of uncooked meal, and simply stir before serving. "This handful of uncooked meal was the basis on which nutritionists, whose science was just coming into being, attacked the Norwegian peasant woman for not knowing how to cook porridge: it would be much more digestible, they said, if it was all cooked, as the carbohydrates would be more quickly digested. There had been several years of bitter academic strife and research..." (in which we may be sure the peasant women had no part). Finally "it was proved experimentally that for people doing hard physical labor in a cold climate, it was a nutritional advantage to have a coarse porridge, some of which was practically raw, as it took a long time to digest but was digested at last. The nutritionists had assumed that this slowly-digested residue of uncooked grain was wasted, and had reckoned how many tons of grain were lost to the nation by this mode of cooking. They belonged, of course, to the 'enlighted' party of students of peasant life" (Rockwell, 1976:11).

Changes are coming, but slowly. The Protein Advisory Group of the United Nations has taken note of the fact that traditional dishes are often found to contain food combinations and special processing ingredients that enhance the nutritive value of the food prepared - devices unknown to modern nutritionists - and are undertaking research on traditional food preparation practices. James McDowell, Senior program officer and chief of the Food Technology and Nutrition Section, UNICEF East Africa Regional Office, conducted a three year study of local foods, food habits and food acceptability at Makerere University, Uganda, before taking up his UNICEF position. Food storage, however, remains a problem. New technologies are needed. Women themselves are currently experimenting with new devices, and asking for assistance in this experimentation.

C. Water and fuel conservation.

New patterns of water availability are usually imposed on women rather than developed in consultation with them. This means that women frequently do not make use of new facilities because they do not fit their daily work pattern. (White et al, 1972). Experiments with tree-planting for fuel, and with alternative approaches to dung as fuel through production of methane are not made available to women through aid programs. They have neither time nor energy to experiment on their own. They therefore continue burdensome and frequently harmful practices to meet water and fuel needs, by default (McDowell, 1976: 53-65).

D. Production of household equipment.

Small improvements on tools used by women in the production of household artifacts are usually ignored because they are not seen as contributing to the market economy. The fact that they contribute to women's household productivity, and that such tools are frequently bartered between households, is ignored. Since women frequently do house construction, the range of improvements related to water conservancy, drainage, sanitation and building of methane tanks for fuel as well as improved food storage facilities do not lie outside their range of competence. Materials, tools, a minimum of instruction and a public legitimacy assigned to their undertaking such tasks is needed before they can use the competence they have to improve household equipment.

E. Inter-household barter systems.

Market analyses do not take account of the fact that food and artifacts are bartered between households and account for some significant part of women's economic activity and the standard of living available to their families. These women-administered barter systems also extend to health care and assistance in finding training opportunities and jobs for family members.

F. Ceremonial knowledge.

Ceremonials and other traditional mutual aid and redistribution devices, many of them administered by women, tend to be seen as a drain on a village economy be aid experts. They are therefore discouraged, making villagers dependent on center-administered welfare programs. Since ceremonials have a basic function of linking the individual to the society, and the society to the ecosystem, and absorbing individual pain and sorrow into the social fabric, the disappearance of public ceremonial has a damaging effect on the mental health of a community and its members. (The need to consciously reconstruct public ceremonials is one of the most consciously felt community needs today in the U.S., the country which has gone the farthest in abandoning public rituals.)

V. The Periphery Helps Itself

The importance of women as food producers has been well known since at least 1970, when Ester Boserup's landmark book on women's role in economic development (Boserup, 1970) was published. In spite of that information, in spite of the World Plan of Action adopted at the International Womens Year Conference in Mexico City in 1975, particularly emphasizing the role of women as food producers, and in spite of government-appointed commissions of the status of women and national plans of action adopted in many countries since then, little has happened to help rural women except when they have mobilized to help themselves. Since all traditional societies have some forms of organization and/or communication networks for women, whether it be the relatively visible women's councils of Africa or the women's bathhouse networks in purdah-keeping Moslem societies, this capacity for self-organization will in the end be what brings women into active participation in the development process and destroys the old notions of the characteristics of the periphery.

The recent issues of UNICEF's Assignment Children (April/June 1977) on "Planning with Women", reporting from 23 countries on development projects covering nearly all the development needs of women discussed in the previous section, undertaken with women, not for them, is an important signal that things are changing. None of the projects could have been designed by men, for they would not have had the necessary knowledge. The development of women's credit associations, women's banks and women's cooperatives, traditional in some parts of Africa but sadly lacking in many parts of the world until very recently, is one of the most important set of enabling mechanisms for the development of women's productivity under conditions that also enhance the quality of their lives and their exercise of political power. Plans are currently under way for the development of an international women's credit facility that will enable first world women to participate in making third world women's projects viable (Michaela Walsh, Rockefeller Brothers, initiator). Another example of international self-help among women is the Working Group of Women in Development formed within the European Association of Development Research and Training Institutes at the initiative of Scarlett Epstein of the Institute of Development Studies, Sussex, England. The International Roster of Women Scholars currently in formation should also serve the same purpose of increasing self-reliance among women. The Geneva-based ISIS, an international self-help network for women, is still another example. The momentum for international self-help among women is building up.

Literacy training, which has received most official attention and funding as a way of improving the status of women, is found to be of minor relevance in enhancing competence in agriculture, health care and other areas of village development (Chowdhury 1976:73; Hasan 1976:87; Shah 1976:70). This is not to minimize the importance of literacy as a skill, but to suggest that women first need resources to meet their primary subsistence problems more effectively, and should themselves be setting priorities as to what type of resources and training are made available when. At present they are not consulted about such priorities, nor are the literacy programs when available always of the type most useful to them.

The society that women will help to build will be different from the one modernization theory led us to expect. It will be different from the one now envisaged by proponents of the New International Economic Order. These are models that belong to the old world of nation-state dominance. The new world society will be a more regionalist, localist one. A look at the world's burgeoning separatist movements, strongest in the oldest, most "integrated" polities of Europe, suggests that.

VI. The Future of Peripheries: Women in South Asia

The concept of the withdrawal of peripheral nations from involvement with the world's centers to develop autonomously through regional interaction at the periphery, with future reintegration into a world society of equals in mind (Galtung, 1975, Kothari, 1975) is one worth research attention at a time of shifting international alignments. The withdrawal of the periphery is happening at many levels. We see it among minority movements in first world countries as well as among some third world countries. China is an outstanding example of successful withdrawal at the periphery. One way to interpret the new self-help movements among women is to identify them also as a withdrawal of the periphery.

South Asia is one logical withdrawal area, although as long as the nation state model prevails it will be dogged by high levels of interstate and communal conflict within the region. I have taken four countries within that region for which data on the economic participation of women is available: India, Nepal, Pakistan and Sri Lanka. They are all poor, recently independent food-deficit countries with rapidly growing populations, and low GNP growth rates. (See Table 1.) Sri Lanka, which happens to have invested the most heavily in irrigation and rural development, in recent years is doing nearly twice as well as the other three countries on GNP.

South Asia is considered an area where women are traditionally nonparticipants in economic life, secluded and oppressed within the home. Certainly any reporting of their economic activity will involve substantial undercounting, and there will be much hidden employment in the form of unpaid family labor. It is therefore surprising to find (Table 2) that Nepal, India and Sri Lanka report 42, 36 and 25% respectively of all agriculturally employed persons are women; even Pakistan reports 14%. In India and Nepal, roughly 20% of the miners are women. In India, 12% of the construction workers are women. One quarter of each country's manufacturing force, except for Pakistan, are women. These are the women in the paid labor force, or women enumerated as self-employed. If we turn to Table 3 we find that in Nepal and India, respectively 78 and 66% of the self-employed persons in the country are women. What these data tell us is that there is already available a very large pool of women with the kind of tool-making and community development potential required for increasing rural productivity, in each of these countries. For each woman enumerated, there will be many others practicing the same crafts unrecorded in their own homes. These are the skills of the periphery. Their skills

may often be poorly applied. We already know that this is in substantial measure due to their excessive work load and poor tools, which allow little room for experiment and innovation.

I have no analysis of women's network potentials in these societies, but the women's self-reliance programs reported in Assignment Children for Sri Lanka, India and Pakistan (Abeywardena, 1977:84-88; Ehatt, 1977: 89-91; Hasan, 1976:78-87) leave little room for doubt that such programs are successful and spreading. If they do not already exist in Nepal they will soon. International women's networks play their part in helping the spread of such innovations. Table 4 indicates how many international women's organizations have national sections in each country. They are usually affilitated with UN agencies which also operate regionally. The 30 organizations present in the region thus represent a regional resource for further training of women and for development of women-initiated projects, with help from UN agencies as well as their own international headquarters. Elitist traditions of urban women can work against such self-reliance approaches, but to the extent that the new consciousness seeps into these urban-based organizational infrastructures, urban women will learn to work with rather than for their rural sisters.

VII. Women and Agricultural Productivity

This entire discussion of productivity at the periphery has been in terms of improving local productivity and local standards of living. Since most development R & D goes into cash crops, and cash crops enter the national and international markets without channeling food into the the mouths of local producers, I have chosen to focus on the possibilities for increasing productivity of crops that feed local people. The larger question of how much food should be grown for export and how much for domestic consumption, and how large the agricultural sector should be in any society, have not been dealt with here. The energy costs of commercial food production are such that some major shifts in commercial food production technologies are likely. Some of that shift will be toward more labor-intensive technologies are even now competitive under certain circumstances with fuel-intensive technologies (Johnsen et al, 1977:373-8). This inevitably means more emphasis on local food production everywhere, although it will certainly not bring the international food trade to an end. As women develop their tool-making and production skills more fully with more resources at their disposal, and develop more fully the financial skills long known to the traditional African "market queens", they should be able to provide substantial leadership in the transition to new modes of agricultural production. Their inventiveness in regard to labor-intensive modes of production will stem from their long experience with the potentials and limits of labor-intensive farming. The fact that women have been flocking into the schools of agriculture in the United States in just the past two or three years, in some cases comrpising up to 50 percent of the enrollment where formerly they were 5 percent of that enrollment, suggests that this is an area particularly attractive to women once the gates of opportunity have been opened. I have suggested elsewhere that countries in which women

are farming partners with their husbands rather than field hands (Japan appears to be such an example) agricultural productivity and general welfare levels of the society may develop more rapidly than elsewhere (Boulding, 1977:106-8). From the perspective of government planners and aid experts, there can hardly be a better social investment than investment in resources for women farmers.

The more basic point I have wished to make in this paper, however, is that center planning cannot develop periphery potentials because the center is too ignorant. By defining the periphery as ignorant, center intellectuals have participated in alienating the periphery from their own means of thought, an alienation as exploitative as any alienation from the means of physical production. The significance of the self-reliance movements of the rural peripheries, and of rural women in particular, lie in their refusal to accept this alienation. How far withdrawal strategies on the part of peripheries will proceed remains to be seen. It depends on how helpless the centers become in the years ahead in the face of a general planetary resource limitation, in part on how fast centers become willing to learn from peripheries and accept them as partners, and in part on the willingness of peripheries to wait for the peaceful evolution of that partnership.

For the long-run future, a peacefully evolving partnership would appear to offer the least costly solutions to the world problematique, but historically speaking humans are frequently impatient and try violent shortcuts to social change - or the prevention of change. As the chief practitioners of nonviolence in all societies (not necessarily by choice), women might become as innovative with social tools as with physical ones, once they have equal access to resources with men, and demonstrate ways to achieve the demolition of the center-periphery organization of human life nonviolently.

TABLE 1

Socio-Economic and Demographic Variables[1] for Four South Asian Countries

Country	Year of Independence	Population Rank (N=158)	Annual Rate of Population Increase	Per Cent Urban (in centers over 20,000)	GNP Per Capita (in U.S. $)	GNP Annual Growth Rate	Foreign Aid Given (+)or Received(-) (in million dollar figures)
India	1947	2	2.1	15	100	1.0	-1107.0
Nepal	1951	48	1.8	2	80	0.3	-2.0
Pakistan	1947	10	2.1	8	100	3.1	-534.0
Sri Lanka	1948	47	2.3	11	180	2.3	-48.0

[1]Based on 1968 data

[2]From Boulding, Nuss, Carson and Greenstein, 1976

TABLE 2

Femaleness of Labor Force Engaged in Agriculture, Mining, Manufacturing and Construction[1] in Four South Asian Countries, Rank Ordered[2] from World Listing Female Index[3]

Country	Agrilculture		Mining		Manufacturing		Construction	
	Rank	%	Rank	%	Rank	%	Rank	%
India	31	36	10	19	45	27	6	12
Nepal	24	42	11	18	48	27	28	4
Pakistan	59	14	80	1	80	10	61.5	1
Sri Lanka	45	25	23	10	66	20	51.5	2

[1]From Boulding, Nuss, Carson and Greenstein, 1976

[2]The total n varies between 96 and 107 countries for these four variables

[3]The percent female of all persons engaged in this type of work

TABLE 3

Femaleness of the Self-Employed[1]

in Four Asian Countries,

Rank Ordered[2] from World Listing

Country	Femaleness Index[3]	
	Rank	Percent
India	4	66
Nepal	2	78
Pakistan	36	21
Sri Lanka	66	10

[1]From Boulding, Nuss, Carson and Greenstein, 1976

[2]The total n is 95 countries

[3]The percent female of all persons engaged in this type of work

TABLE 4

Number of Memberships in Women's Nongovernmental Organizations
By Type of NGO for 4 South Asian Countries

Country	Type of Organization				
	International Relations	Professional	Religious	Educational	Total
India	6	12	6	6	30
Nepal	3	1	0	2	6
Pakistan	4	8	3	4	19
Sri Lanka	3	6	3	2	14

*From Boulding, Nuss, Carson and Greenstein

VIII. Bibliography and References

1. April, Jay E., et al. "Cassava's Role as a Food Staple", Preliminary Report for Office of Nutrition, Bureau for Technical Assistance, AID. Boulder: University of Colorado, 1974.

2. Bartova, Eva. "Images of the Women and the Family", pp. 255-278 in Ornauer, et al (eds.), Images of the World in the Year 2000. The Hague, Mouton, 1976.

3. Boserup, Ester. Woman's Role in Economic Development. New York: St. Martin's Press, 1970.

4. Boulding, Elise. "Economic Dualism: Women's Roles and Poverty Traps", pp. 77-110. "Women, Bread and Babies: Directing Aid to Fifth World Farmers", pp. 111-138. "Women and Food Systems: An Alternative Approach to the World Food Crisis", pp. 139-166. All in Women in the Twentieth Century World. Sage Publications, New York: Halsted Press Division, John Wiley & Sons, 1977.

5. Boulding, Elise, Shirley A. Nuss, Dorothy Lee Carson and Michael A. Greenstein. Handbook of International Data on Women. Sage Publications, New York: Halsted Press Division, John Wiley & Sons, 1976.

6. Carroll, Berenice A. "Peace Research: The Cult of Power", Journal of Conflict Resolution, Vol XVI:4, pp. 585-616, 1972.

7. Chowdhury, Zafrullah. "The Mother and Child in Bangladesh - a View From the People's Health Centre." Les Carnets de l'enfance (Assignment Children) 33 (January-March): 68-77, 1976.

8. Cockcroft, James D., Andre Gunder Frank and Dale L. Johnson. Dependence and Underevelopment: Latin America's Political Economy, New York: Doubleday and Company, Inc., Anchor Books, 1972.

9. Dernberger, Robert F. "The Relevance of China's Development Experience for Other Developing Countries", Social Science Research Council, Items Vol 31:3 (September), 1977.

10. Eisenstadt, S.N, (ed.) Post-Traditional Societies, New York: W.W. Norton and Company, 1974.

11. Epstein, T. Scarlett (ed.) Planning with Rural Women: Report of Study Seminar held January-February (1977) at the Institute of Development Studies, University of Sussex. Les Carnets de l'enfance (Assignment Children), 38 (April-June): Symposium issue.

12. Galtung, Johan. "Nonterritorial Actors and the Problem of Peace", pp. 151-188 in Mendlowitz, On the Creation of a Just World Order, New York: The Free Press, Macmillan Publishing Co., 1975.

13. Galtung, Johan. "Social Position and the Image of the Future," pp. 381-402 in Ornauer, et al (eds.), Images of the World in the Year 2000, The Hague: Mouton, 1976.

14. Hasan, K. Zaki. "The Rural Health Guards in the Northern Areas of Pakistan". Les Carnets de l'enfance (Assignment Children) 33 (January-March): 78-87, 1976.

15. INCIDI (International Institute of Differing Civilizations). Women's Role in the Development of Tropical and Subtropical Countries, Report of the XXXIth Meeting, Brussels: 11, Boulevard de Waterloo, 1959.

16. Johnson, W.A., V. Stoltzfus, P. Craumer. "Energy Conservation in Amish Agriculture", Science 198 (October 28): 373-378, 1977.

17. Kothari, Rajni. "World Politics and World Order: the Issue of Autonomy", pp. 39-70 in Mendlowitz, On the Creation of a Just World Order, New York: The Free Press, Macmillan Publishing Co., 1975.

18. Larsen, Knud S. "The Powerful, The Powerless and The Future", pp. 421-440 in Ornauer et al (eds.), Images of the World in the Year 2000. The Hague: Mouton, 1976.

19. Meadows, Dennis L. Alternatives to Growth I: A Search for Sustainable Futures. Cambridge, Mass.: Ballinger Publishing Co., 1977.

20. Meadows, Donella. "The World Food Problems: Growth Models and Non-growth Solutions", pp. 7-44 in Dennis L. Meadows, ed., Alternatives to Growth I. Cambridge, Mass.: Ballinger Publishing Co., 1977

21. Mendlowitz, Saul, ed. On the Creation of a Just World Order. New York: The Free Press, Macmillan Publishing Co., 1975.

22. Meynaud, Jean (ed.) Social Change and Economic Development, Paris: UNESCO, 1963.

23. Nair, Kusum. The Lonely Furrow: Farming in the United States, Japan, and India. Ann Arbor: The University of Michigan Press, 1969.

24. National Research Council. World Food and Nutrition Study, Interim Report. Washington, D.C.: National Academy of Sciences, 1975.

25. Ornauer, H., H. Weberg, A. Sicinski and J. Galtung, editors. Images of the World in the Year 2000: A Comparative Ten Nation Study, The Hague: Mouton, 1976.

26. Pimental, David et al. "Food Production and the Energy Crisis", Science 182 (November 2): 443-449, 1973.

27 Rokeach, Milton. The Open and the Closed Mind, New York: Basic Books, 1960.

28. Shah, P.M. "Community Participation and Nutrition, the Kasa Project in India", Les Carnets de l'enfance (Assignment Children) 35 (July-September): 53-71, 1976.

29. Skjelsback, Kjell. "Young Believers in a World State", pp. 475-502 in Ornauer, et al (eds), Images of the World in the Year 2000, The Hauge: Mouton, 1976.

30. United Nations. Employment Growth and Basic Needs: A One-World Problem, New York: Praeger, Publishers for the Overseas Development Council, International Labour Office, 1977.

31. van der Veer, Kees. "Social Position, Dogmatism and Social Participation", pp. 621-636 in Ornauer et al, eds., Images of the World in the Year 2000, The Hague: Mouton, 1976.

32. White, Gilbert F., David J. Bradley and Anne V. White. Drawers of Water: Domestic Water Use in East Africa, Chicago: University of Chicago Press, 1972.

THE WORLD FOOD "CRISIS" AND THE NEW LOOK IN AGRICULTURAL SECTOR DEVELOPMENT STRATEGIES

John L. Fischer

I. Introduction: The World Food "Crisis"[1]

A major objective of the Tucson Conference is to review the resolutions on women and food adopted by the World Food Conference in Rome, November 1974. The conditions which spawned the World Food Conference are generally summed up in the term "the world food crisis." The "crisis" has generated unusual public interest in food, nutrition, and agriculture. Thousands of pages have been written, and every major magazine, TV network, and professional journal has devoted time and energy to the topic. Unfortunately, the issues are not simple, and there is much controversy and conflict among the "experts." For example, one group of very reputable scientists insists the world's climate has changed, but most climatologists reject the idea. Who is the ordinary person to believe?

Most of the reports available, being written by mortals, attempt to "sell" an idea or viewpoint. Enlightened folk sense this, and I am frequently asked, "Where can I get a balanced presentation in understandable English?" Unfortunately, the only completely honest answer is, "nowhere;" however, the following come close and are helpful.

1. "Food," a special issue of Science, Vol. 188, #4188, published by the American Association for the Advancement of Science, May 1975, and articles in subsequent issues, available from AAAS, 1515 Massachusetts Ave., N.W., Washington, D.C. 20005.

2. The World Food Situation and Prospects to 1985, FAS report #98, published by the Economic Research Service, Dec. 1974; and the World Agricultural Situation, reports issued tri-annually, available from the USDA, Washington, D.C. 20250.

3. "Assessment of the World Food Situation, Present and Future," prepared by the Secretariat of the United Nations (UN) Food and Agriculture Organization (FAO) for the World Food Conference, November 1974, and subsequent reports. available from FAO, Rome.

This paper draws extensively from the above references. All are good, but they are not equal. The Science articles are the best balanced, and it is the best single source available. Anyone, including the lay people attending the Tucson Conference, can understand the well written articles. Policy; institutional problems; weather impacts; the technical aspects of

soils, food science, genetics, photosynthesis, nitrogen fixation; and even the human food/livestock feed issue, are covered from as objective as possible a perspective.

The USDA publications are good, but the reader should be aware they are representative of what in worldwide circles is an optimistic view. They reflect the USDA's (or the so-called "American") position, which may be right, but it is, nevertheless, not accepted as being totally objective in many international expert circles.

FAO reports are representative of a fairly pessimistic view. From among the world's food and nutrition professionals, the FAO stable is the most neo-Malthusian of all. In 1975, the reputable British Economist charged the FAO with being primarily dedicated to convincing the world there is, and ever will be, a food shortage!

II. The World Food/Population Balance

Between 1954 and 1974, world food production rose faster than population--2.8 percent per annum for production and 2.0 percent for population. The food supply per capita increased at the rate of 0.8 percent per year. In 1974, the world's four billion people had on the average about one-fifth more food per person than did the 2.7 billion in 1954. In the aggregate, we have been making good progress in terms of feeding the world, and the average world citizen faces little threat from hunger during the next ten to twenty years. How then, could there be a food crisis?

The problem in 1974, as today, is that people don't starve "on the average!" Certain individuals, families, residents of areas, and socio/economic classes go hungry; and most of them do so only periodically.

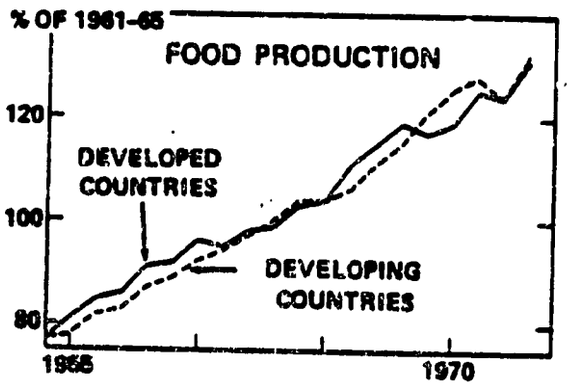
Figure 1 shows what is probably the most important food situation differential--the developed vs. the developing "worlds." Food production in the developing countries has risen at rates comparable to the developed countries, but their population has grown more rapidly and the increase in per capita food supply has been very slow. The food supply per capita increased 1.5 percent per year between 1954 and 1973 in developed countries, but only 0.4 percent in the developing countries. And, the various regions of the world have not fared similarly either. Figure 2 shows regional differences.

When starvation has occurred, it has been associated with low crop yields, or some form of crisis in livestock, usually caused by adverse weather. Mayer, writing in Science, dates and locates famines since World War II, and almost all are weather related. In 1972 and 1974, world food production was less than the previous year, and the reduction in supply set the stage for the crisis the 1974 World Food Conference confronted. In both 1972 and 1974, unfavorable weather was a major factor.

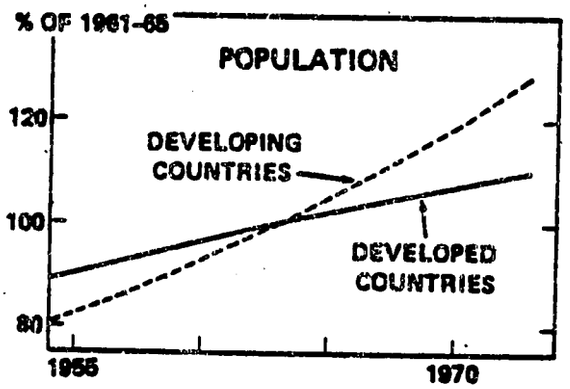
FIGURE 1

FOOD PRODUCTION AND POPULATION, DEVELOPED AND DEVELOPING COUNTRIES

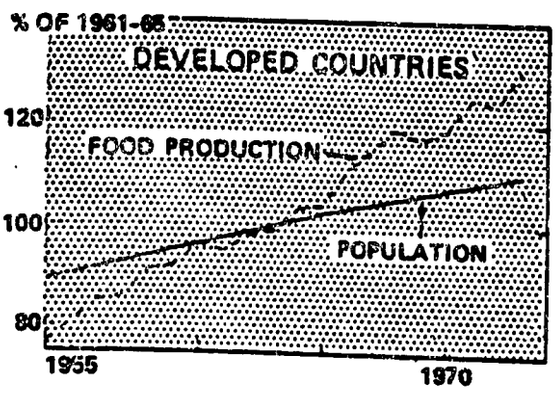
Food production has grown steadily over the past two decades. Growth in the developing countries has roughly paralleled that in the developed countries.

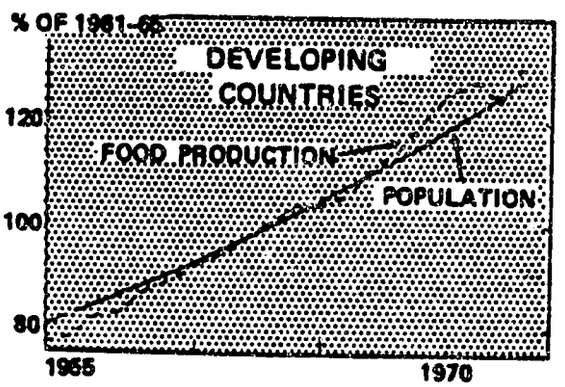


Population has grown much faster in the developing countries.



Peoples of the developed and developing country groups have not fared equally from the roughly equal growth in food production. In the developed countries production has increased much faster than population, boosting production per capita. In the developing countries, population gains have absorbed nearly all of the production increase; production per capita has improved only slightly.





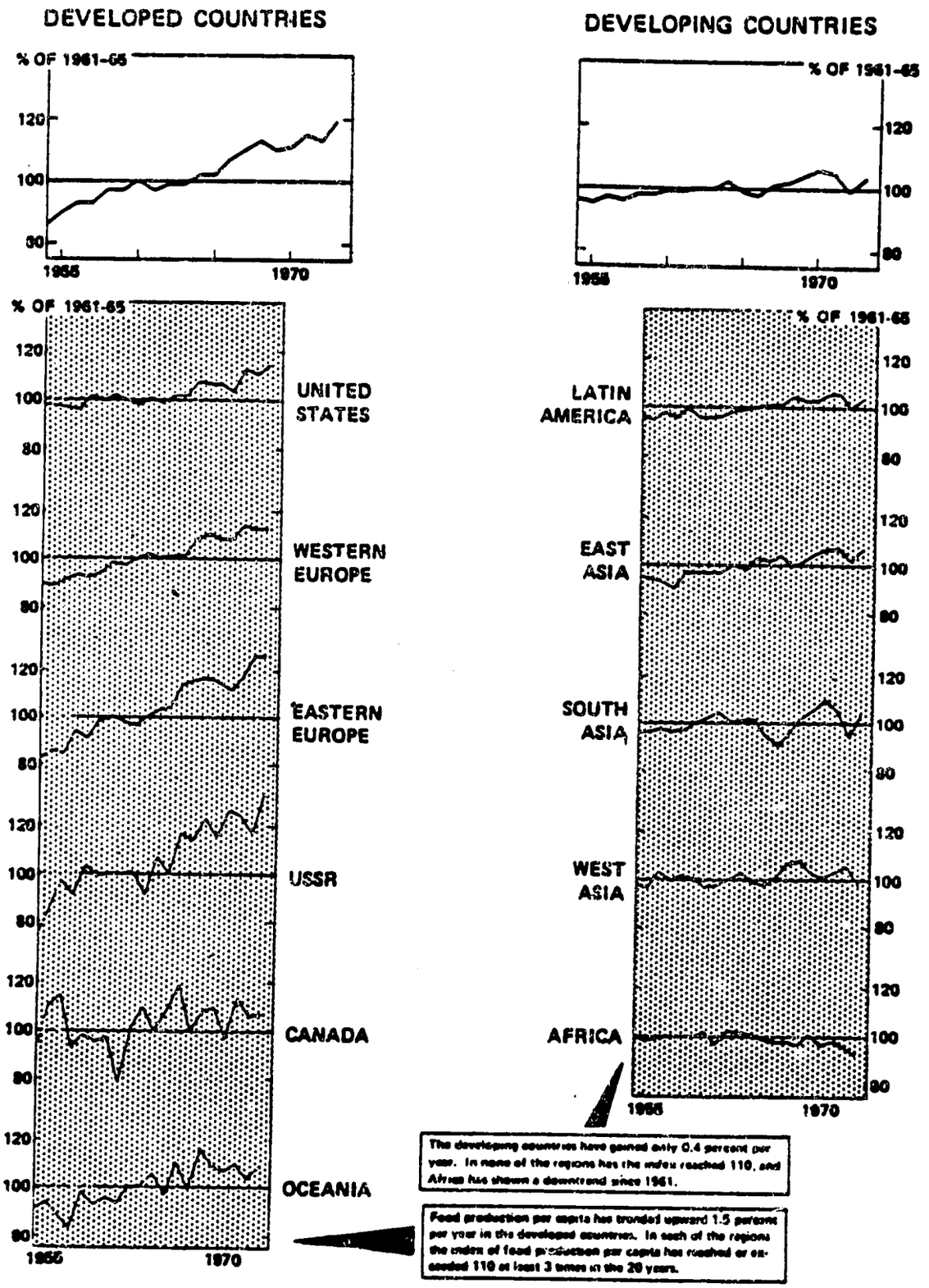
DATA EXCLUDE COMMUNIST ASIA

SOURCE:
U.S. DEPARTMENT OF AGRICULTURE

NEG. ERS 426-73 (12B)
ECONOMIC RESEARCH SERVICE

FIGURE 2

FOOD PRODUCTION PER CAPITA



SOURCE:
U.S. DEPARTMENT OF AGRICULTURE

NEG. ERS 427-73 (12)
ECONOMIC RESEARCH SERVICE

III. Population

Most of the gain from increasing the food supply in the past has been absorbed by population growth (see Figure 1), and the fastest growth has occurred in the areas least able to provide for more people--the developing countries. To ask, "Where will it all end?," is appropriate.

The Tucson Conference cannot ignore the implications from rapid population growth because 434 million of the world's 462 million people which, according to FAO, had insufficient protein-energy supply in 1970 were in the rapidly growing developing countries, and most were in the world's 25 "poorest of the poor" countries. However, if the developing countries follow the developed country pattern and population growth rates decline with development, the outlook is not so bad. Most of the industrial states have reached, if not precisely zero population growth, the condition immediately preceding it (2). There is hope! We need to be concerned, but there is no need for panic which could lead to foolish actions. All food balance projections are based on trends, and the trends are changing. However, it will take time for present conditions to run their course and additional corrective actions to come into play. For 10 or more years, we can expect population in the developing countries to grow at a rate of 2.2 percent or more per year, and feeding the increase will be very burdensome.

IV. Can Food Production "Keep Up"?

I would like to dispose of this question quickly and emphatically. In physical terms, the answer is a resounding "Yes." Cereals alone could supply the calories and much of the protein needed by the world's half billion malnourished people. On an annual basis, about 25 million tons would have been needed in recent years if production had been normal. This is less than 2 percent above normal production, and the world could easily produce it. And, looking to the future, we can rather easily--again in a physical sense--provide proper diets for the projected population for many years to come. The difficult problems are not how to produce more food, but how to get it produced and distributed to those who need it.

V. Who Goes Hungry?

My fellow professional agriculturalists tend to oversimplify the world's food problems by thinking in terms of, (a) the need for more food, or (b) the market. Both mislead us.

If it were true that the world's food problem was simply one of meeting the need for more food, almost any developing country could solve its problem by concentrating the national effort on a relatively few large farmers with the greater managerial skills, adequate land resources, and access to capital. Some developing countries have utilized this approach, and it may have a place in a well thought out overall strategy for

development. Unfortunately, in most developing countries the problem is not so simple; rarely is the need simply for "more food," and to so believe leads to serious trouble.

Hunger in most of the developing countries is primarily a result of low income. People with high incomes don't go hungry. Journalist Walter Schwartz wrote from Dacca in October 1974, "The immediate cause of the famine (in Bangladesh) is not outright lack of food..., but that the poor have no money to buy it." (3) The same could be said for the Sahel, Ethiopia, or Kenya. Food flows to areas and people with purchasing power.

Most of the world's poverty stricken, hence hunger prone people, are in the agri/rural sector, and the vast majority of the families (70%) in the sector are poverty stricken. (4) It is paradoxical that those in the world most threatened by famine are people whose major economic activity is food production! Starvation, 1970's decade version, is primarily a rural phenomenon, rooted in rural poverty. Throughout the world, low income is primarily a result of low productivity in relation to the human factor, and the least productive tend to be in agriculture. Increasing productivity in agriculture is the key to solving the food crisis.

VI. Haven't the Developing Countries and Their Development Advisors Always Been Concerned with Increasing Productivity in Agriculture?

Most of the developing countries, in their development strategies, have concentrated on increasing aggregate production. Efforts have been directed primarily toward new technology adoption and the use of more capital and labor saving methods. Major attention has gone to export crops, and to the commercial subsector of agriculture. The strategies have not taken into account that when who are the people most susceptible to suffering is considered, whose production is to be encouraged becomes of equal importance to getting more product produced. Most developing countries have not concentrated their agricultural strategies on reaching the poor in agriculture.

The concepts on which many developing country leaders have relied ignores what is happening to the masses of rural people. Developing country economic development plans have largely ignored "...that few people ...shared in the (economic) growth process and many...suffered an actual reduction in the quality of their life." (5) In five countries in which I have worked in recent years, total agricultural production has increased at a favorable rate, but the majority of the rural people are relatively worse off today than they were 10 to 15 years ago, and the majority of the people in all five countries are rural. On a worldwide basis, most developing countries face the same plight. Until recently, little was done to focus attention on the fact that in many countries at least one-third of the total population are unemployed, and "...these people, no longer linked to society through their traditional roles...are being shoved to the margin of life..." (6) In many countries, women represent a large proportion of those being shoved to the margin.

VII. Lessons from the Past

A. The Strategy Errors: Food and agriculture policies are parts of national policies for growth and development. During the period 1950 to 1970, most developing countries, with aid agency support, made industrialization the keystone in their strategies for economic growth and development. They noted that the developed countries were all industrialized countries, and they extended the lion's share of their developmental energies and investment on industrial projects. Agriculture was largely ignored; at least not regarded as a potential growth industry. Prior to 1973, relatively few resources were channeled into improving agriculture. In most developing countries it was believed that if they (1) obtained capital from abroad, (2) used modern technology (same as used in the developed countries), and (3) created institutions which were specifically modeled after those which existed in the U.S. and Europe, they, too, would soon be developed countries.

Within the agricultural sector, what was the strategy? The same type of reasoning described above prevailed. At the risk of oversimplification, we could call it a strategy based on "modelling and modernization." Institutions were modeled after those in Europe and in the United States, and efforts made to introduce modern farm technology. For example, almost every developing country devoted considerable effort to creating an extension service modeled after ours in the United States. The theory was that farmers did a poor job of farming because they didn't know better. With education, they thought, rural people would raise their incomes. The use of labor saving machinery, especially tractors, was strongly encouraged. Exogenous breeds of livestock were introduced. New varieties of crops and improved cultural practices were introduced. Institutions fostering commerical farming modeled after the U.S. and Europe were introduced.

What was achieved by the overall and agricultural sector strategies has been described above in parts V and VI. In the keynote address to a Conference on Regional and International Planning, Dr. Benjamin Higgins, a recognized authority on economic development, summed up his viewpoint by saying that in terms of economic growth (defined as increasing GNP), the record was good, but in every other way, a failure! In a similar vein, it can be said that in terms of food production, the record is good, but in every other way, a failure!

The crude statistics are frightening. In 1973, the world's population was about 3.8 billion, with almost one billion living in countries where the average annual income was less than $200, and the GNP per capita averaged $94. Almost four-fifths (3.1 billion) of the world's people lived in countries where the gross national product per capita was less than $640, averaging $253. But, to these frightening statistics, we must add at least one more to really get proper perspective. In the typical developing country, more than half of all income goes to 20 percent or fewer of the families, or, to put it conversely, 80 percent of the people get less than half of the meager income. The top 5 percent of the income recipients in those

countries with gross domestic production of $500 per capita or less typically receive more than 30 percent of all the income. The problem is that the bulk of the people in the developing countries have not shared in economic growth. The typical person is little, if any, better off than he was a decade ago! And, the typical person is in agriculture.

In the agricultural sectors of most developing countries, those farmers with above average managerial skills, and access to adquate acreages of land and capital, have generally been doing well in terms of increasing output; and they have usually done well financially, too. They are the ones who have adopted "Green Revolution" and other new Western World style technology. In turn, they have tended to substitute capital for labor, as has been done in the developed countries; and in some countries they have kicked out their tenants and bought out their poorer neighbors. But, whereas in the developed countries, especially the U.S., Canada, and most of Europe, the displaced laborers and tenants went into higher-paying industrial employment, this has not happened to a similar degree in today's developing countries. The displaced have often only added to the already unemployed and underemployed statistics. In the developed countries, labor displacement in agriculture left the farmer better off, the worker better off, and the food production system more efficient. It contributed to development. But, in the developing countries of today, the process has often meant increased unemployment and accelerating the rush to already decaying cities. In several countries, the rush of people to the cities is currently being halted by police action. In many developing countries (probably most), displaced rural people and the increases in population are being forced to farm rapidly declining land holdings, and to move into marginal, high risk areas. On a worldwide basis much land, subject to severe erosion, is being put to the plow. Kenya is an illustration.

B. Conclusions:

First, the policies of concentrating on industrial development have simply "not worked" in the developing countries. On the 20th anniversary of the United Nations Development Program (UNDP), Dr. Hoffman, the first head of that organization, reviewed the record and in a report entitled "Were the Experts Wrong?", concluded that they had been. He pointed out that the only way the developing countries could avoid catastrophic conditions was to concentrate more of their developmental effort on agriculture. He noted that the developing countries could not possibly create and obtain the capital needed to create off-farm employment fast enough to provide for the natural increases in population which they face. They face a situation in which not only are the current millions of people "locked" into agriculture, but in most of the developing countries, there will soon be many more!

Second, when we look at the agriculture sectors of the typical developing country and find 60 to 90 percent of the total population with the bulk of the people little or no better off today than they were 10 or 20 years ago, and many worse off, we cannot give past strategies high marks. Millions of rural people have not participated in the process of development in the developing countries. The developing countries find themselves in a trap,

the logical outcome of which is increased violence and political instability. This, in turn, leads to less savings, reluctance to invest in anything (including land and farm improvements), and further deterioration in the overall economic system.

Third, it is an error to think of famine and inadequate daily diets as being primarily a food supply problem. To do so gives the impression that in order to solve the developing countries' food and famine problems, all that is required is to increase the food supply. Nothing could be further from the truth! The truth of the matter is that the problem can be better described as a "rural poverty crisis." There is famine primarily because so many people in the world cannot earn enough to pay for what they need. They cannot pay for what they need basically because they are extremely unproductive, and the bulk of the extremely unproductive are in agriculture. The agricultural development strategies of the 1950-1970 era were a failure, but the failure is not in terms of failure to produce food. The problem is rather with the total system. The system did not reach out to include large numbers of people, including women. In other words, doing more of what was done in the 1950-1970 era will not solve the food/nutrition problem.

Fourth, recent developments provide solid grounds for hope. The Honorable Sayed Marei, in his Presidential address to the 1974 World Food Conference, set the stage for a revised perspective for agriculture when he declared old methods for dealing with food problems "...have been found inadequate...and we cannot leave...(their) solution to the slow workings of the normal development process and...existing mechanisms... We must raise the food problem above the (agricultural) sector." (7) It is clear the coming decades will be dominated by three central problems: food, population growth, and unemployment. "Only by facing the trinity together will we find solutions..." (8) The key words are above and together.

I am moderately optimistic that the environment is finally right for the changes which have so badly needed to be made. Many developing country leaders and development advisers have now learned that the dual goals of (1) increased production, and (2) social justice, in national plans are not only compatible, but are interdependent and must be addressed simultaneously. This is an exciting step forward. One result is the current interest in the basic needs approach. (9) Also, most developing countries are now aware that without rural development, there can be no sound or substantial overall national development. This too is an excellent step forward. Whereas it was once believed increasing the productivity of small farmers could not be done economically, the internal rate of return for well-managed projects can, it is now known, be high. Recent studies have revealed the traps and pitfalls of the "standard brand" approach used for agricultural development in many developing countries during the past 20 years. We now know that a well planned and effectively implemented integrated rural development program can provide the balance needed in goals for national plans, avoid the pitfalls of "standard brand" agricultural programs, and achieve bona fide socio-economic development at a cost

within the reach of the developing countries. The Third World is wisely starting to move in the right direction.

VIII. The New Strategies

Both the developing countries and the international aid agencies have now reached the conclusion that major revisions in strategy are required. Unfortunately, change seldom comes easy, and in this case it is very painful and hard. Progress is slow. First, let us look at the aid agencies.

A. The Aid Agencies: The World Bank has provided much leadership in revising developmental strategies in developing countries. Mr. McNamara, in an address to the Borad of Governors in Nairobi, Kenya, set the stage when he called for a worldwide "Reorganization of development strategy which would concentrate on the rural poor." His conclusions were reached, in part at least, from a World Bank working paper concerning support for international research centers in which it was recognized that "...far from reducing social tensions in rural areas, the spread of new technology (as had been occurring) is likely to sharpen them..." (10) In general, the Bank is trying to get developing countries away from the idea that the indiscriminate utilization of agricultural technology from the developed countries is an answer to their major problems. The Bank is instead trying to use its funds to get them to target in on solving the problems of the masses of the rural poor.

The Swedish aid (SIDA) and Canadian aid (CIDA) programs have been excellent. Both ran slightly ahead of the World Bank. Experience from some of the Swedish programs of the late 1960s and early 1970s concentrating on the rural poor in Ethiopia and elsewhere has been especially helpful. The efforts of Dr. Barry Nestle and the rural development research center in Colombia are noteworthy.

The FAO has moved relatively slowly; however, the pace is now quickening. The Indicative World Plan and a special 1973 report recognized that "The problem of un- and underemployment...looms as far more intractable than food supplies. With it comes not only human misery but social unrest and political instability." (12) FAO is in a position to have a tremendous impact in the years ahead.

Our own USAID began to talk about the problem in the early 1970s, but did relatively little until the era of the "Congressional Mandates. The Congressional Mandates tell AID to concentrate its efforts on (1) helping the poorest 25 countries, (2) programs intended to solve the problems of relatively poor people, (3) food and nutrition, and (4) making sure women are involved in the process of development. The Office of Women in Development is a product of the Mandates. One interpretation of the Congressional Mandates is that our AID program shall in the future be less attuned to political and military objectives, and more attuned to humanitarian objectives.

B. The Developing Countries: The developing countries are generally revising their priorities for programs and policies. I belive all have learned that without rural development, there really can be no national development. All are giving much higher priority to agriculture in general, and equity issues in particular. These are necessary first steps. As a result, ministries of agriculture and other action agencies are being told to develop programs that will reach the smaller farmer, the villager, and the nomadic herdsman. New agencies are being created in many countries, and budget allocations seriously revised.

The "neglected" areas and/or commodities (involving large numbers of people) are now being given additional attention. Examples are:

(a) Range livestock areas: There are approximately 40,000,000 people in the world who get their livelihood from nomadic and quasi-nomadic range livestock systems. They are among the poorest people in the world, and they are among the more hunger prone. In many countries, their territory is being crowded by increased cultivation, and overgrazing threatens their very existence. We know that it would be possible to raise their productivity substantially. There is now interest in these people, but most of the developing countries and aid agencies are still floundering in terms of how to come to grips with the problem.

(b) Rain-fed agriculture, especially in semi-arid areas: These are the areas which suffered the worst in the recent food crisis. We know that productivity in these areas can be increased, and introducing integrated crop/livestock systems can partially stabilize output. There is now interest, but tested programs are not readily available.

(c) Women in agriculture: Many developing countries now realize they cannot increase overall productivity very rapidly unless women are included in agricultural programs. The Tucson Conference will address many of the critical questions.

(d) The "hard to reach" people in general: These are the people who are uneducated, lack access to credit, and have inadequate land resources. To date, they have rarely benefited from development. Yet, unless they are reached and their productivity increased, the world will remain a frightening place. Priority must be given to "reaching them," and many countries are making a supreme effort to do so.

IX. Program Content

What do the new programs "look like"? There is, of course, considerable variation, but generally the principal aim is to increase rural incomes by raising agricultural productivity and creating non-farm employment in the rural areas, while simultaneously making social services, such as

health and education, generally available to the rural population. (13)

The key elements in the programs are strengthening local institutions to involve rural people much more fully, and coordination of various activities--especially the delivery of inputs and services--required to make small farmers more productive. In some countries, women are being included as full partners, but in many they still are not.

While much remains uncertain about the "new" approach, the following are the directions the new programs are taking:

1. A "people orientation" is the key theme in agricultural sector planning and policy.

Planners and policy makers are thinking in terms of utilizing physical resources to meet human needs, and not the reverse, as so frequently has been done in the past. Physical resources are important only as they relate to people's welfare.

2. More projects are being planned on an area basis.

Integrated rural area development is receiving much attention. The idea is to use the resources of each area as much as possible for the benefit of the people of that area. The approach recognized that mass shifts in population are not in the cards in many developing countries; therefore, it is assumed future increases in population will have to be productively employed and receive social services within the area.

3. Program and project objectives are increasingly being expressed and evaluated, in socio-economic terms.

The idea is to guarantee that the ultimate goal of improving overall welfare will not be overlooked or shortchanged in agricultural production programs. It establishes a sound basis for evaluating progress, and helps avoid confusion between the means for reaching a goal with the goal itself. (The production oriented ministries and agencies, such as agriculture, whose services are vital to increasing productivity, are prone to confuse means and ends in projects.)

4. Increasing agricultural productivity on the part of smaller (typical) farmers is being made the "hard core" activity in ever greater numbers of projects, and given highest priority.

There are exceptions, but subsistence food production is the most important economic activity in most areas desperately needing help in order to spur economic development. Rapid increases in productivity generally can be achieved at reasonable cost if programs are well planned and managed. Benefits can accrue to a wide base of recipients. Agriculture is increasingly being recognized as being the logical "starting place," but emphasis is on the typical producer--not the "big man."

5. Less emphasis is being given to production for export, and more to meeting local food needs.

In the past, developing countries felt they had to stress exports to get the foreign exchange needed to purchase capital goods for industrial development. Now, they realize that if food is short they must use foreign exchange to purchase it, and industrialization benefits too few people and comes at very high cost.

6. Activities that improve the quality of rural life are being made an integral, equal partner in projects.

Coordinating the delivery of social services with increasing productivity provides incentive for rural folk to produce more and remain in the area. Tying increased amenities to increased output holds program costs within the capability of developing countries, and even states (provinces) within national borders. This makes the new approach "salable" to ministries of finance and national planning organizations.

7. More use is being made of local leadership.

Projects prepared outside an area and carried out by those within the area have been found to be failure prone. Recent worldwide experience indicates involving local people is mandatory if production targets are to be met.

8. In all aspects of project planning, the search is on for ways to obtain higher returns (benefits) for more people from limited resources and factors.

New programs are searching out the constraints to increased productivity and attempting to remove them, especially for small farmers. Emphasis is on self-help activities. (They realize that for agriculture an efficient system for delivering in a coordinated manner of all of the inputs and services required for the small farmer to become more productive must be established.) The key word here is coordinated. Groups, such as cooperatives, are being used more than in the past.

9. Priority is being given to integrating the establishment of local industry and service organizations into development so they grow with increased agricultural production.

The idea is to broaden the scope of rural development and effectively integrate agriculture, services, and industry. Thus a dynamic aspect of economic growth is initiated. Marketing of farm products, processing farm outputs, producing inputs, and rendering social services--all locally--are used as logical starting points for regional development. More use is being made of the systems approach in planning and policy making.

10. New programs and projects are being developed to reach those neglected in the past.

Women are a classic illustration. Their role as major food producers has generally been ignored. Other illustrations are range livestock

157

programs under nomadic and quasi-nomadic systems, the semi-arid areas, and dairying and hog production as supplementary income earners for villages and small farmers. More attention is going to commercial and cooperative agricultural production.

11. In agriculture, the above guidelines are leading toward programs which are not modeled after what exists in developed countries. Efforts are being made to determine what can be done to solve critical problems as they exist in specific countries. We are seeing:

(a) Renewed interest in the credit system, but stressing the smaller farmer and finding ways to link credit use to increased productivity and repayment possibilities. Production credit for the very poor may have to be extended on a group basis. The "credit problem" is a most troublesome part of the "new look."

(b) Utilizing the production package approach, which is a means for obtaining high yields from technical inputs without encountering bottlenecks that prematurely cut off potential benefits. The modus operandi for extension is being revised, and credit use is being linked to use of the "packages."

(c) Searching for bottlenecks in production, marketing and other factors which constrain current output and welfare possibilities, and removing them. This is a variant of the foregoing example, which applies to existing activities instead of new ones.

(d) Dealing with farmers in groups rather than individually. Groups are being formed for purposes of extension assistance, credit, marketing, and supplies. Cooperatives will have a vital role to play in most countries. New cooperative concepts, especially efficiently operated multi-purpose local units, will be required in many countries.

(e) Making the required inputs readily available at reasonable costs. In many countries maximum increases in productivity can be achieved at least cost by concentrating on improving availability of fertilizer, feed, etc.

(f) Protecting the market enough to induce a subsistence survival oriented family to produce for it, but avoiding commitments that overstress the financial capacity of the government. Productivity has been found to be restrained as much by lack of a viable market as by anything else.

(g) Coordinating field activities. This presents a difficult problem for many developing countries, but remains the crucial ingredient. Multi-purpose field organizations under a single agency may be the only workable alternative in many countries.

158

X. Concluding Statement

The strategies the developing countries are pursuing today are a big improvement over those of a few years ago, but much still remains to be done. Millions of people in the rural areas are still not being given the opportunity to participate fully in the development process. The largest single group still being largely bypassed (or ignored) is women.

The results from the new strategies will be very desirable, but impacts badly needed NOW will lag by several years. Unfortunately, momentum from past policies will probably have to run its course. A U.N.D.P. report predicted, "...wastage of human resources in the agricultural sector in developing countries will increase from about 25% overall in 1970 to around 30% by 1980." (11) Many countries cannot "take" this level of wastage. Violence will increase and there will be political instability. This situation, rather than the question of whether we can feed the world, is what is frightening and heartbreaking. The situation is heartbreaking because it doesn't have to be this way. With proper management and utilization of currently available developing country and development agency resources, in a decade all the world's people could have a reasonable opportunity to meet their daily dietary needs.

XI. References

1. This paper combines two papers circulated prior to the Tucson Conference. The paper draws extensively from two articles by the author, published in Beef Cattle Science Handbook, Vol. 13, Agriservices Foundation, Clovis, California, 1976.

2. See N. Poleman, "World Food: A Perspective," Science, Op. Cit. P. 515.

3. L. Moore, "The Concept of Integrated Rural Development--An International View," Report of International Seminar on Integrated Rural Development, (Islamabad/Rome: Government of Pakistan and FAO/UNDP, 1973), p. 55.

4. See D. Caton and R. Van Haeften, "A Strategy Paper--," AID (Washington, D.C., May 1974) p. 21.

5. Ibid.

6. Moore, Op. cit. 5.

7. Ibid.

8. L. Echeverria Alvarez, "Cooperation or Chaos," CERES, #38 (Rome: FAO Mar-Apr 1974) p. 29.

9. See: ILO, Employment, Growth and Basic Needs, (Geneva, 1976); A Strategy for Basic Services, (UNICEF, 1977), Paul Streenen, "The Distinctive Features of a Basic Needs Approach to Development," AID mimeo, (Washington, D.C., 1977), and "Aspects of National Development Policies in the Context of a Basic Needs Approach," (OECD/DAC Experts Meeting, 1977).

10. Benjamin Higgins, Regional Economic Development Planning, Proceedings and Papers of the Regional and International Economic Development Planning Conference, July 31, Aug 1, 1975. (Virginia State College, Petersburg, VA, 1975)

11. See R. McNamara, Address to Board of Governors, Nairobi, 24 Sept. 1973, (Washington: IBRD).

12. Quoted by Wade, Ibid.

13. See K. Jansson, "Forward," and L. Moore, "The Concept of Integrated Rural Development--an International View," Report of International Seminar on Integrated Rural Development. (Islamabad/Rome: Government of Pakistan and FAO/UNDP 1973), p. iii and 55; and Conceptual Overview of Rural Development (Washington; AID, 1974).

14. Moore, Op. cit. 5.

APPENDIX B

VOLUNTEERED PROJECT PROPOSALS

AN ACTION-ORIENTED STUDY OF THE ROLE OF WOMEN IN RURAL DEVELOPMENT IN ASIA

T. Scarlett Epstein
School of African and Asian Studies
University of Sussex

PROPOSAL FOR THE DEVELOPMENT OF A PREVENTIVE HEALTH PLAN AS PART OF THE RADA INTEGRATED RURAL DEVELOPMENT PROJECT - YEMEN

Fatima Huraibi
Director of Fisheries Department
Ministry of Agriculture
Sana'a, Yemen Arab Republic

INCREASING THE PARTICIPATION OF RURAL WOMEN IN THE DEVELOPMENT OF THEIR COMMUNITIES IN THREE PROVINCES OF THAILAND

Marlene Futterman
Executive Director
Overseas Education Fund, Washington, D.C.

WOMEN IN GHANAIAN DEVELOPMENT PROJECTS

Judith Bryson
USAID
Ghana

NATURAL RESOURCES PLANNING PROJECT IN NIGER

J. E. Crow
Professor, Political Science Department
University of Arizona, Tucson

Helen Henderson
Anthropologist, Niger Natural Resources Project
Arid Lands, University of Arizona, Tucson

PIG DEVELOPMENT SCHEME FOR WOMEN, BELIZE, CENTRAL AMERICA

Marion Marshall
Department of Agriculture
University of Minnesota, Minneapolis

PAPAGO FOOD PRODUCTION PROJECT

Cynthia Anson
Anthropologist, Portable Practical Education Program
Tucson, Arizona

A STUDY OF WOMEN'S PARTICIPATION IN AGRICULTURAL PRODUCTION IN A RURAL COMMUNITY IN THE WEST AFRICAN SAHEL

Cynthia Anson
Anthropologist, Portable Practical Education Program
Tucson, Arizona

NON-GOVERNMENTAL ORGANIZATIONS/UNICEF WOMEN'S WATER PROJECT

Helen B. Kadane
Non-Governmental Organizations
World Food Crisis Committee
International Women's Decade Committee

FOOD WHEELS

Frances Johnson
Conference Manager
A.I.D.

AN ACTION-ORIENTED STUDY OF THE ROLE OF WOMEN IN RURAL DEVELOPMENT IN ASIA

Dr. T. Scarlett Epstein

I. Introduction

This Project is quite different from most other studies in development:

A. It is about women in the countryside.

B. It is comparative, involving several Asian countries.

C. It is being conducted by social scientists and extension field workers belonging to the society under review.

D. It includes an action program unique because

1. Evaluation of the impact of the action program is going to be monitored by the social scientists who will have collected all the data prior to the action component;

2. The researchers having been accepted by the population under survey are favourably placed to evaluate local reactions to innovations;

3. Each social scientist will be involved in the development of the technology which will be introduced as well as in training the extension personnel.

This is a unique project, not only because it deals with women, but more important because it provides an ideal setting for experimenting with involving rural women in different types of development programs.

II. Justification for the Project

The recent shift of emphasis in development programs from concentrating on maximizing overall GNP growth rates to focusing on poverty and redistributing the benefits derived from economic growth has helped to draw attention to the role of women in rural development. Women constitute the majority of rural populations and represent a gravely underprivileged category in Less Developed Countries (LDCs). The discrimination against

women in India, for instance, begins when baby girls are 7 days old after which age selective treatment given to baby boys accounts for a higher infant mortality rate among girls than boys. Altogether the life expectancy of women in most LDCs is lower than that of men, while the reverse is the case in Developed Countries (DCs).

The education of rural girls is also sadly neglected. All over India "the discrimination in education led to a literacy rate of only 18.7 percent among women compared to 39.5 percent for men. In the Rajasthan Desert area female literacy reached only 4 percent in the 1971 census" (Herald Tribune).

Agriculture remains the major economic activity for women in LDCs. According to the 1971 census of India 80.1 percent of women workers are found in agriculture. Yet developers still continue to ignore the fact, that women are actively involved in farming. Subsistence production, which is the domain of female work, falls outside the interest and competence of developers, who are mainly concerned with being able to show impressive GNP growth rates.

Agrigultural research and experimentation is everywhere concentrated on increasing the volume of cash crops. Only very few women are employed as agricultural advisors. In line with the traditional sex role segregation, male agricultural extension officers prefer to contact male rather than female farm labor. So far rural women seem to have become victims of rather than participants in the development process. The cause of this and its possible remedies form the focus of this project.

This cross cultural action-oriented program aims to train researchers to collect detailed micro-data on rural households in general and women in particular in order to use it as the basis for suggesting more appropriate technologies (with institutional backing) to improve the quality of rural life, particularly among the poorest people.

III. Research Component

Several in-depth studies of micro-societies are planned: two in each of several Asian countries (Bangladesh, India, Indonesia, Pakistan and Sri Lanka). These will be carried out by indigenous Ph.D. candidates registered with the director of this program and co-supervised by a local expert. They will all meet at Sussex for 9 months pre-fieldwork training at the School of African and Asian Studies. Subsequently, each student will spend one year of intensive study in one small society collecting data by means of participant observation. Selection of the villages to be studied will be made in collaboration with the indegenous Rural Development Programs and the students' local supervisors.

In July 1979 the students will come to Sri Lanka for four months to enable them to process their field data, exchange experiences with their fellow students, and participate in the training of village extension personnel.

Subsequently, for another 8 months students will return to their respective field site accompanied either by one single female or by a male and a female village extension worker. During this period the students will fill in the gaps in their earlier fieldwork and monitor the ongoing process of innovation. Since they should by then have established rapport with their informants they should be well placed to help explain the villagers' responses to the extension efforts. The villagers are to be involved in this process of evaluation.

After this additional 8 months in the field the Ph.D. students will attend a workshop in Sri Lanka before going back to write up their theses. During their field work they will be expected not only to write field reports but also to submit work in progress papers to their home university.

IV. Action Component

Most research is conducted without direct contact with action programs. This often makes findings sterile, while many development projects are organized without reference to the appropriate theoretical background, which may account for many failures.

This Project attempts to link research and applied work. The "Action Aspect" has two dimensions:

A. Appropriate Technology. Based on the details of existing technologies collected by the students Appropriate Technology experts should be able to improve designs which will subsequently be tested in field experiments. Attention will also be directed to market openings for the resulting increase in output to encourage villagers to produce more.

This Project provides an ideal experimental situation, which it is hoped will be utilized by a number of Agencies concerned with Third World Development. At a recent UNDP meeting in New York the possibility of experimenting with Sanitary Water Supplies in rural areas was discussed. This problem is of great concern to WHO and UNDP. Moreover, it should be possible to experiment with rural self-help medical facilities in the context of this Project. All these are areas of development programs which relate particularly to rural women and therefore fit extremely well into this Project.

B. Village extension workers will be trained with the help of the students and relevant experts in how to work with villagers rather than for them. They will work in close liaison with the students residing in villages for the eight months fieldwork which is part of their association with this Project. Moreover, they will be encouraged to help women to form local associations and to become more self-reliant. This exercise will require the co-operation from the indigenous Extension Services in terms of provision of goods and services, which it is hoped will be secured.

The Heads of the Extension Services in the Asian countries included in this Study have already declared their commitment to the Project - they will arrange for the participation of extension personnel and will subsequently put them in charge of training others in the newly acquired skills of offering "package programs", including productive extension to rural women.

V. Publications:

A series of about 10 publications will result including a "Manual for Productive Extension Services focusing on Rural Women" which will be translated into different vernaculars.

VI. Timing:

The primary research part of this project starts after completion in October 1977 of the "Cross-cultural Study of Population Growth and Rural Poverty".

4/76 A Research Officer is appoited with funds provided by the Rockefeller Foundation. Her task is to work through published and unpublished materials relating to the role of women in Asian rural societies so as to take stock of available knowledge, point out the gaps in what is known and produce an overall review article.

6/77 Dr. Epstein visits the Asian countries to:
7/77

A. Interview candidates and choose Ph.D. students for the Project and arrange registration at a local Research Institute or University Department;

B. Select for study two representative rural societies in each of the Asian countries, guided by advice from colleagues indigenous to the country;

C. Contact the appropriate authorities to secure cooperation for the Action Component of the Project.

10/77 The team of Ph.D. students begin their one-year pre-fieldwork training at AFRAS, Sussex, helped by some of the 8 Ph.D. students who are participating in "The Cross-cultural Study of Population Growth and Rural Poverty" who will then have completed their theses.

7/78 The students set off for their one year micro field study.

11/78 Drs. Epstein or Senaratne visit each Ph.D. student in the field and contact the appropriate authorities to arrange for the selection and recruitment of extension personnel.

1/79 Each student submits a detailed field report. After discussion with the local supervisor Drs. Epstein and Senaratne synthesize the data, discuss it with experts in intermediate technology research so that appropriate technologies can be developed or adapted;

7/79 The students and the extension workers to be trained gather in Sri Lanka. The students do their provisional write-up and help to train the extension workers.

11/79 The students return to the field accompanied by a single or a couple of extension workers.

7/80 Workshop in Sri Lanka;

D. The students return to their respective universities to write their theses;

E. The extension workers begin to train groups of extension workers in their respective home countries on how to focus on women.

6/81 The students submit their Ph.D. theses.

9/81 The Ph.D. theses suitably edited are sent for publication and the Project comes to an end.

PROPOSAL FOR THE DEVELOPMENT OF A PREVENTIVE HEALTH PLAN AS PART OF THE RADA INTEGRATED RURAL DEVELOPMENT PROJECT YEMEN

Fatima Huraibi

I. Purpose of the Work

1. To give women assistance by providing basic information on women to two Dutch-German development efforts in the Rada area of the Y.A.R. within the scope of the development cooperation between the Netherlands and the Y.A.R.:

-DITH-involvement in the implementation of a "community health scheme", set up an MCH (Maternal and Child Health) Clinic and district health centres in cooperation with the Church of S.M. and the Yemen Ministry of Health.

-DITH-involvement in the implementation of the Rada Integrated Rural Development Project in cooperation with the Yemen Ministry of Agriculture and executed by the International Land Development Consultancy Organization (ILACO).

2. To promote the integration of women in the development process in the Rada area and their active participation in development efforts by setting up an integrated preventive development program.

II. Justification

Both the above-mentioned medical and rural development projects implicitly aimed at the autonomous development of the Rada-area by actively involving the local population.

DITH participation in the medical project has as its underlying objective "to contribute to an improvement in general socio-economic conditions (...) by providing basic health services as to large a part of the population as feasible. (...). Active involvement of the community will be encouraged and stimulated whenever possible, integration of curative and preventive development programs will be sought."[1]

One of the most important underlying prerequisites of the Rada Integrated Rural Development Project, while presumably concentrating on the development of agriculture/feeder roads and water/supplies is the active participation of the local population and their representatives in the Rada area in order to assess integrated development.[2]

Since both development efforts are related to the existing historically grown, socio-economic structure of the local society and since this local society is known for its strong division of labor be sex in the productive process, it is necessary to pay separate attention to the roles of women in the development efforts.

In the Rada-area women are involved in a great many activities besides the common household tasks of cooking and cleaning. Women are responsible for child rearing, carrying water, and gathering fuel. They participate in husbandry, farming and semi-agricultural activities such as transport and processing agricultural raw materials.

In addition to these general characteristics of the socio-economic position of women in the Rada area, there is another reason to pay separate attention to women in development efforts. Non-induced development due to the opening up of Yemen and the special relationship between Y.A.R. and Saudi Arabia does have an important influence on the socio-economic position of women in the area; the presence of numerous male migrant laborers to Saudi Arabia and some other neighboring countries and the consequent rise in cash income in the area of affecting the roles women play in the production process. Although the withdrawal of a large part of the male labor force is in itself an inducement as well as an obstacle to integrated development, it justifies even more the involvement of women in development efforts.

To carry the nations of integrated development and active participation of the local population beyond the stages of passivity, one of the explicit starting points of development efforts should be awareness of the monumental contribution of women to the production of the local society and recent changes therein.

To further female assistance as well as to integrate women in the development process of the Rada area while staying within the scope of existing development projects in the area, a preventive development program is a good choice. The standard of health is related to (medical technical cases) personal and environmental hygiene, the level of education and the informal transmission of know-how about maintaining or raising the standard of health, the quality and quantity of food supply and health as well as medical cases. Thus measures to raise the standard of health must touch on the general living and working conditions. A preventive development plan, taken in its general sense and aimed at women, is a prerequisite for raising the level of the security of subsistence. At the same time, it initiates within Yemen society a feminine role in the integration of women in development efforts. The position of women in the Yemen society is such that involvement of women will only be possible through activities over which women retain a predominant responsibility. Although a preventive development program necessarily touches a great many activities of women it does not disturb the existing sexual division within the local society. For these reasons the establishment of a preventive development program is an integral part of the existing and future curative health-plan and related in practice to the Rada Integrated Rural Development Plan, will most likely succeed in obtaining the approval and participation of the local population and Yemini authorities.

III. A Preventive Development Program

Thus the idea is to work on the establishment of a development program which has as its aims the improvement of the standard of health by means of non-medical measures and the integration of women in the development process. In addition, this preventive development program is seen as an integral part of the medical and rural development projects in the Rada area.

Such a program will have to be concerned with the following activities:

a. Selection of activities for preventive health measures which are related to mother-and-child-care, household activities such as water management and female activities within agriculture;

b. Selection of cooperation groups, villages and sites to initiate the program or extend existing programs;

c. Develop the content of the education/extension program;

d. Design the strategy and method of implementation of the program;

e. Provide means and personnel for the program.

IV. The Collection and Assessment of Baseline Data

In order to be able to develop a preventive development plan and to identify the related issues, it is of primary importance to collect and assess some basic information. Thus far little information exists on Yemeni women due to the general neglect of women in development efforts and lack of female experts.

This means, first of all, that basic knowledge about women and their socio-economic position will have to be provided for the Rada area on:

a. the autonomy/dependency of women in decision making within the family system concerning matters of livelihood;

b. the juridical position of women at birth/marriage/death;

c. the labor contribution of women to maintaining or raising the standard of living;

d. the informal ways women serve or promote their interests and their felt needs;

e. the informal organizations and activities of women;

f. the influence of recent changes in the Rada area on the socio-economic position of women (e.g., the influence of male migrant labor, rise of cash income, introduction of new food items, etc.).

Secondly, basic knowledge about women and health will have to be collected in order to assess the knowledge, attitudes, practices and capacities of women in relation to health:

a. ideas and practices concerning health and health maintenance;

b. food provision, diet and food regimes;

c. organization of water management for household purposes, availability and quality of water;

d. personal and environmental hygiene;

e. practices to prevent and accompany pregnancies and births;

f. practices and ideas concerning childrearing.

Further on the related issues can be identified by an evaluation of the ongoing "community health scheme" as it is run by Ms. Sheila Yebb since 1976, its effects and range, organization and extension methods. This scheme can provide information on recent experiences with development activities among women in the Rada area since a great many villages are affected by the scheme.

The information acquired will serve to identify the basic requirements for raising the standard of health by means of general preventive measures and identify the obstacles and possibilities for promoting the integration of women.

Moreover, to do so it will be necessary to explore the regional and national context of the following:

a. The socio-economic infrastructure of the Rada area;

b. National health programs and regional health organization;

c. Experiences of other programs aiming at women;

d. Internal possibilities of the medical and rural development projects, etc.

V. Content of the Work Contract

From the foregoing remarks, it can be seen that the following tasks must be fulfilled within a DITH-contract:

A. Research:

1. Provision of basic information on the socio-economic position of women in the Rada area;

2. Provision of basic information on women and health in the Rada area;

3. Assessment of possibilities and obstacles for the establishment of a preventive development plan.

B. Evaluation:

Evaluation of the ongoing "community health scheme" on its effects and range.

C. Project Identification of a general preventive development plan within the framework of the existing projects and aimed at the active participation of women and integration of women in the development process. This means at the same time:

D. Project support of the ongoing projects in the area by providing information and ideas on the integration of women in their development efforts concerning mother-and-child care, water development and agriculture.

V. Methodology of the Work

Depending on secondary circumstances (transport, counterpart) the work can be executed in the above order of tasks, although both research and evaluation and project identification and support can be done simultaneously.

Research and evaluation can be done through open interviews or questionnaires among selected women in selected villages and with key persons and representatives at the local, regional and national level.

Bibliography

1. Van der Gugten, A.C. and Gitzels, w. Th. C. - Dutch Medical Mission to the Yemen Arab Republic, 25 May-25 June 1976, 4/YAR-1/76.110/LT., p. 38.

2. ILACO - Integrated Rural Development Plan for the Rada Area. Arnhem, 1977, p. 11.

INCREASING THE PARTICIPATION OF RURAL WOMEN IN THE DEVELOPMENT OF THEIR COMMUNITIES IN THREE PROVINCES OF THAILAND

Developed by
PVO Consortium: Overseas Education Fund of the League of Women Voters (OEF) and the National Council of Women of Thailand (NCWT)

Project Location: 7 rural villages in the Provinces of Chacheongsao, Mahasarakam and Lampang

Contact Personnel: Ms. Marlene Futterman, Executive Director
Overseas Education Fund
2001 L Street NW, Washington, D.C. (USA) and
Kyunying Sumalee Chartikavanij, President
National Council of Women of Thailand Manang
Kasila, Larn Luang Road, Bangkok, Thailand

Date Submitted: December 1977

I. Project Goal

To improve the socio-economic living conditions of poor rural women and their families.

II. Project Purpose:

To increase the participation of Thai rural women in 7 villages of Chachoengsa, Mahasarakam and Lampang Provinces, in the development of their communities by training them in skills to increase their income (or decrease their family's expenses) and to enable them to take a leading role in their community's development.

The primary objective of this 20-month project is to be achieved by:

A. Involving rural women in the design, implementation and evaluation of development projects which respond to their own expressed needs;

B. Identifying and utilizing appropriate, acceptable and comprehensible methods to be used by Thais in providing nonformal education to rural villagers having little or no education;

C. Developing a communication network within the local/provincial framework which can be used by rural women to address village community needs with available local resources; and

D. Strengthening the capabilities of local/provincial women's organizations to facilitate replication of the community development process and skill training in other villages in their regions.

Six villages are to be selected to participate in the initial training project, based on criteria to be established by the NCWT. The major concern will be for the villages where little or no community development efforts have been made, where the needs are the greatest and where there has been an expression of willingness to participate. Village selection in Chacheongsao Province (Central Region) and in Lampang (Northern Region) will be from some of the same villages in which a recent survey on the "Status of Thai Women in Two Rural Areas of Thailand" has just been conducted. Village selection in the Mahasarakam Province (Northeastern Region) will be based on earlier investigation by NCWT/OEF of requests for assistance from among the poorest rural sector groups, with a special emphasis on a resettlement community.

The seventh village will be selected in Chachoengsao Province will be designated as a "model village for community development", in which cooperative training efforts will be tested to meet a variety of community needs. This village will continue to operate after this initial project span, under the patronage and evaluation of NCWT.

III. PROJECT STAFFING

A Project Team will be composed of; two Co-Directors (a technical Field Consultant identified by OEF, and a Thai counterpart identified by NCWT), the four Provincial Clerks (one for each Province and one in the model village). This team, with assistance from the national and local NCWT members, will set up project work centers, coordinate and assist in the implementation of the training activities. Part-time resource persons, typists, graphics and writer personnel, and translators will be employed locally as needed. Upon completion of the project, the NCWT will employ the Thai Co-Director as a staff member, using her experience and knowledge to assist NCWT in future rural development projects, to consult with other agencies seeking to set up communication and training components of rural programs, to represent NCWT at conferences and seminars devoted to community development and women, and to conduct seminars/workshops on the process of integrating rural women into community development activities. The experience of the Provincial Clerks can be utilized at the rural level to assist in coordinating requests for future programs.

IV. PROJECT DESIGN

The project is to be conducted in a series of three complete training cycles, each encompassing two villages. The emphasis of the training will be on economic improvement (e.g., producing marketable items; producing items which otherwise would have to be purchased; improving the quality of currently produced items; etc.), including occupational investment, financial management and planning, saving, marketing, cooperative process, etc.

The same training cycle is to be completed in the model village, utilizing the experience gained in the other six locations, but extending the time frame. This will provide an opportunity to study the training retention, work accomplishment, motivational and behavioral changes which take place as compared to the other sites where training will be conducted simultaneously in two villages. More emphasis is to be placed on assisting women to meet as many community needs as time allows. Due to the close proximity of this Province to Bangkok, it is anticipated that site visits can be arranged for representatives of a variety of agencies interested in the process of project design.

Prior to the actual skill training of rural women in their villages, a series of workshops are to be undertaken to provide a unique opportunity for approximately 100 Thais, working and learning together, to develop and test methods and materials which can be reproduced and/or used for village development and training:

A. 35 local and national NCWT members are to be trained in the rural process of the project, by involving one or more at a time in each phase of the work, as resources, coordinators, observers or participants;

B. 16 village women leaders (two from each selected village and four in the model village) are to be trained as VILLAGE PROJECT AGENTS to mobilize their own village women; identify and articulate priority needs and required services; participate in the design, implementation and evaluation of their own training project materials; establish training schedules; and learn how to get help necessary to meet future needs in their own villages or nearby communities;

C. 30 persons with expertise in specific content areas (Government and non-government personnel, but primarily from the Ministries of Community Development, Accelerated Rural Development, Agriculture, Education, etc.) are to be re-trained as RESOURCE CONSULTANTS and participate with Village Project Agents and the Project Team in designing and evaluating appropriate materials, technology and teaching techniques which they will use when conducting village skill training courses and assessing community development requests;

D. 14 students currently enrolled in Teacher Training institutions in the three Provinces, are to be trained as COMMUNICATION ASSISTANTS, to assist in preparation, administration and evaluation of basic comprehension/retention level pre-tests of the villagers who will receive skill training, and design additional media techniques for use in the initial or followup training;

E. 50 local/provincial RTG officials, workers, students, faculty members, women's groups and public/business interest groups, to participate in a series of monthly PROJECT UPDATE SEMINARS, to learn of the overall project operations, and assist in formulating appropriate communications networks to accommodate future rural development within the local framework; and

F. 275 rural women (approximately 35-40 in each of the seven villages) will learn a skill or technique from Resource Consultants, which will enable them to increase their income and/or decrease their present spending costs; and to adapt to the use of new or extended skill (how to use income) and adapt to upgrading of their living standards.

Upon completion of the village training and evaluation, training manuals, teaching kits and reinforcement materials will be reproduced for distribution and use by future trainers. It is anticipated that some of the kits will be "learn-it-yourself" types for those whose educational level warrants that usage. Other guides will be produced in planning additional training by other media (such as plays, songs, group dramas, radio programs, etc.) and will be utilized as much as project time permits.

Each training phase of the project will be photographed and documented, providing a full history of the project. The OEF Field Consultant will be responsible for this documentation. A series of cassette tapes will be used to record comments, expressions of problems/attitudes of all participants in the training cycles. It is anticipated that a full slide/tape presentation will be produced for educational and training purposes and/or in planning communication aspects of future projects in Thailand or elsewhere. A full Project Report will be produced and distributed widely, because although this project is aimed at only three small segments of rural Thailand (where education, health and economic conditions are poor) it is anticipated that the process can be replicated and integrated into other nonformal education and community development schemes throughout the country. The Report should be of use to RTG Ministries, non-governmental organizations, international development agencies, other private voluntary organizations, etc., in designing projects to meet felt needs of the rural poor.

If the anticipated results are favorable after the first two training cycles have been accomplished, a request for extension of the project will be submitted to the funding source, enabling replication in another series of villages in additional Provinces.

V. Project Rationale

In 1975, the NCWT adopted Nonformal Education as one of its major activities in response to small-scale human assistance requests received through some of the 91-member organizations located throughout Thailand. Despite the fact that women constitute 50% of Thailand's population, few projects give serious consideration to the specific skill training needs of women. A vast majority of Thai women would benefit from nonformal education which would allow them to become an integral part of their country's development mainstream and to assist in upgrading the standards of living in their communities. NCWT's Nonformal Education Committee has successfully provided short-course skill training to over 2,000 urban and semi-urban women.

Early in 1977, the Nonformal Education Committee investigated project possibilities in one of the least developed sectors of the Northeastern Region, where needs of poor village women were relayed through two of the NCWT member organizations. The Committee determined that services were urgently needed, especially for income generating techniques. They found enthusiasm and support for a training project from the village women, the women's organizations, educational institutions in the area, and local RTG officials. However, the Committee determined that resource personnel were encountering problems of designing relevant training methods to communicate with the majority of the village women who have little or no education. The Committee could not rely on materials and teaching techniques they had produced for urban skill training, which would leave the rural women with half-understood concepts of no real meaning or usefulness.

In May of 1977, the newly elected Board of Directors of NCWT adopted a new focus: "Promotion of Community Development Through Women." This focus is to support the RTG's policy to develop rural communities. NCWT designed and conducted a series of regional seminars for its member organizations in Bangkok and the provincial areas. The topic was, "The Role of Women in National Development for the Unity of the Nation" with workshops to develop leadership and motivation among the members. The primary purpose of the seminars and workshops was to prepare the local women as catalysts and coordinators of rural community work in their own Provinces.

A survey on the "Status of Thai Women in Two Rural Areas of Thailand" (Lampang and Chacheongsao Provinces) was conducted by NCWT and the Faculty of Social Administration of Thammasat University, with financial support from USAID and consulting assistance from OEF. Information was gathered from 1,000 rural families (and interviews held with all women between the ages of 15-49 in the 20 villages), to determine realistic conditions, problems, needs and attitudes. Results of the survey which was published and distributed in October 1977, indicate that virtually all of the women in both Provinces are very concerned with their families' financial condition. Ninety-six percent of the women interviewed felt they should and could contribute more if they received appropriate

training and assistance. Findings also indicated a desire to develop their communities and to provide a better standard of living for all inhabitants of the villages. The women expressed willingness to learn ways to increase their income (primary requests were for agricultural improvement techniques, animal raising, vegetable crops, dressmaking) and to participate more fully in the community improvement activities.

Therefore, the NCWT agreed to integrate their nonformal education and community development/leadership programs and to provide as much assistance as possible to help meet the needs expressed in a small segment of the rural population. NCWT again sought the technical assistance from OEF to assist in implementing a project to determine the best and most effective means of training poor rural women.

This project is based on the premise that identification of appropriate means of communication, adequate preparation of training materials, involvement of villagers and resource people in the continuous flow of planning, testing and feedback, and effective reinforcement of skill training, are all necessary components of rural-based community development programs. The process lends itself to taking sufficient time in each village to allow for thorough understanding of all personnel--staff and participants.

The project will emphasize the importance of the role of women as catalysts, working together with a wide variety of resource people and locally available materials, to maintain the Thai culture when adjusting the status of their families and communities.

WOMEN IN GHANIAN DEVELOPMENT PROJECTS

A. Small Farmer Development Program

Judith Bryson

I. Purpose

The purpose of the Small Farmer Development Program is to develop an institutionalized, coordinated system for the provision of improved agricultural inputs and services to small farmers on a timely and regular basis. Inputs and services to be provided under the project are: Improved on-farm storage, credit, fertilizer, seeds, intermediate technologies, extension, and marketing services.

II. Roles of Women

Plans have been made to include women among the recipients of all these inputs and services. For example, research to establish the best package of technologies to introduce to the small farmer will be conducted with an awareness of sex related roles in agriculture (i.e., men do the land clearing, women do the sowing, both are involved in harvesting, etc., but this varies from place to place within Ghana) as well as the incremental labor requirements of innovations and their likely impact upon women. It is also intended to involve women in activities designed to improve the marketing system as the traders traditionally involved in purchasing crops from farmers are primarily women. In the past, however, this might have been overlooked and men given the loans to purchase trucks and build improved storage facilities, thereby cutting women out of the business. Care will be taken to insure that this does not happen in the implementation of the program.

III. Activities Planned

To achieve the goals of fully utilizing local and home resources, increasing the production of nutritious foods and fulfilling local needs from local production as much as possible, resources will be channeled through the Home Extension Unit of the Ministry of Agriculture directly to women farmers. The 80-women staff of this unit will provide:

A. Improved seed and fertilizers, and hand tools to expand the number and quality of demonstrations.

B. Extension services, and

C. Methods to improve storage facilities. It will use:

1. Pilot farm/home demonstration centers to test and disseminate intermediate technologies and improved practices for more efficient use of local materials and resources.

2. Donated vehicles to increase the mobility and dispersal of the small staff of field agents.

3. Research support from the Home Science Department of the University of Ghana to develop instructional materials, intermediate home and farm technologies and short-term training programs for field workers.

IV. Grant and Institutional Backing

In order to clarify the design for this component of the project and to permit smooth implementation of planned activities, a grant of $50,000 was provided by AID in fiscal year 1975 to the Home Extension Unit and the Home Science Department. The grant provided for the construction of 10 farm/demonstration centers in rural areas/villages, plus the first stage of a workshop/laboratory on the campus of the University and the organization of training workshops for field agents to be held at the University. Evaluation of this activity is scheduled for May 1976 and the findings used to improve the implementation of this aspect of the Small Farmer Development Program.

V. Expected Impacts - General

The Farmer Association and Agribusiness Development Project is designed to support private and voluntary initiatives and action in order to determine appropriate and/or optimal means of achieving wide-scale rural improvement through farmer associations and rural-based business enterprises. A number of private and voluntary organizations (PVOs), both American and Ghanaian are expected to be involved in the project. The project will allow the PVOs considerable flexibility in developing sub-projects to extend their very individualistic approaches to rural development within the context of general project guidelines. However, an appropriate system of review and evaluation will be established to permit all participants to benefit from experience and results, both positive and negative, that develop in the course of each organization's activities.

VI. Expected Impacts - Women

Each PVO will be expected to address the role of women in its

sub-project proposal. They will make all reasonable efforts to involve women in their administration and afford equal opportunity to women in activities initiated under the sub-project. The role of women will be a concern in all formal evaluations. The report has been shared with PVOs to assist them in addressing this subject in their proposals.

B. Health, Population and Nutrition Projects

The report provided considerable documentation of the effect upon women of the current health, population and nutrition systems in Ghana. The health environment in the country is a considerable drain on their energies, the women are further burdened by repeated child bearing and lactation in combination with poor diets and lack of medical care. The nutritional deficiencies of pregnant and lactating women were shown to be on the same order as children under five, i.e., they were meeting approximately sixty percent of their requirements. The effect upon the lives of Ghanaian women is dramatically clear when it is recognized that one woman in four in the child bearing years has a completed pregnanc each year as compared with one in fourteen in the United States, and most women are breastfeeding their children to the age of 18 months. The importance of women in the food chain was also documented, and it was apparant that they would have an important role to play in any intervention which might be introduced to improve the nutritional status of Ghanaians.

The existing health, population and nutrition projects of the Mission were already concentrating on women and children and the report provided additional justification for this emphasis.

C. The Women in Ghanaian Development Project and Planning for Other Mission Programs

The study provided a broad brush picture of the situation of women in development in Ghana, but the Mission recognized that analysis in more depth would be required for projects which included the advancement of the socio-economic status of women among their goals. Whatever attempts were made to improve the socio-economic status of women could change the framework of a society and its most basic power relationships. Men could be expected to resist change in the status of women if it was not introduced with care. Changes of certain types might also be resisted by women who found them threatening to things which they hold dear and/or the women might feel themselves ill propared to take on the new responsibilities which were required by the change. The methods used to introduce change and the agents of change would have to be carefully chosen or they might do more harm than good. The information was needed for the design and/or implementation of the activities which were described above and for other new projects which include the District Planning and Rural Development Project, the Intermediate Technology Project and a Non-Formal Education activity.

However, the mission also recognized that given the nature and complexity of the problem involved, the most useful thing a foreign donor could do was to assist the society to undertake its own analysis and come to its own conclusions (on the assumption that the exercise is being undertaken in good faith and there is a clear intention to uncover the facts and act upon them in a way which results in greater social equity for women). The impetus for change must also be seen to come from within and to be representative of the aspirations of the women of the country, not the product of outside forces such as the "liberation" movements in the United States and European countries. The results of the analysis could be used by the government of the country and private organizations in reorganizing existing services for women or developing new ones, and the donor could also use the information in planning its own project activities.

The creation of the National Council on Women and Development (NCWD) provided an excellent focus for such an analysis. The Council was inaugurated on April 21, 1976, concurrent with the completion of the report. Among other responsibilities, the Council's functions are "to advise the Government generally on all matters relating to full integration of women in national development at all levels"; and "to examine and evaluate the contributions of women in economic, social and cultural fields, and to advise Government as to the specific areas where participation by women may be strengthened or initiated." Preliminary contacts were made with the Council to discuss a possible cooperative effort in preparing the analysis which was needed both for their purposes in the public sector element of the proposed Women in Ghanaian Development Project which will be discussed in more detail below.

A second interest of the Mission was in assisting women's PVOs to become more effective in meeting the needs of women in support of their development roles. The study had noted the important role that voluntary organizations play in the economic and social life of many Ghanaian women. The organizations are used for a variety of purposes including financial and social security, education, recreation, and religious activities. They have also served as a political medium and an avenue toward emancipation. It was recognized that these organizations could serve as a useful base for project activities as it would be easier to reach women in groups than as individuals. PVOs were also expected to be the implementers for a number of Mission activities (including the FAAD activity) and the Mission wanted to insure that the women's PVOs would have the capacity to participate in these projects.

The organizations had a number of difficulties, one of the most important being the lack of contact between urban based and rural groups as the urban groups had skills and resources which could be used to meet the needs of rural women. This lack of contact was a problem even in organizations which had branches in all parts of the country as limited funds made it difficult for the leaders of organizations to carry on correspondence and travel in-country. Paradoxically, these

leaders often had the opportunity to attend international conferences and symposia and were provided with the necessary funding to do so by the international affiliates of their organizations or by foreign donors. What was needed was some mechanism which would make it possible for the leaders to apply the skills they had learned to the problems of women in Ghana.

As a first step in this direction, the Mission made a small grant to the Ghana Assembly of Women (GAW), which is an umbrella organization to which 23 women's groups are affiliated. The purpose of the grant was to permit the executive council of the GAW to expand the services available to its constituent member organization for rural development programs. The progress of this grant activity has helped the Mission Project. It has been determined that the organizational capacity of the women's PVOs will be most improved by providing them with mini-grants to carry out pilot activities. These activities will be focused on four key problem areas of women in development: (1) women in the food chain; (2) increased incomes for rural and urban poor women; (3) time constraints and labor saving devices for women; (4) health, family planning and nutrition problems of women. In combination with these grants, support will be provided for leadership management training programs which will be designed to enhance the capacity of the organizations to carry out training programs for rural women leaders.

NATURAL RESOURCES PLANNING PROJECT IN NIGER

J.E. Crow and Helen Henderson

It is the view of the Natural Resources Planning Project in Niger that development will inevitably bring about changes in the social, political, and economic aspects of society. Our hypothesis is that such changes can be productive of benefits equitably distributed among the population if natural resource planning is based on identifying the cultural, social, and economic realities of men and women within the villages of the region.

The goal of the village survey, a part of the wider Natural Resources Planning Project in Niger, has been to facilitate the formulation and implementation of criteria for regional development within Zinder Department. Comparative village data will be directed to answering questions related to energy use, agricultural practices, market participation and attitudes towards resource development. Data on the activities and opinions of women, as well as men, has been considered an integral part of the data base of the project.

Specific areas of interest in the village survey are:

1. The study of labor allocation within rural households with regard to crops, livestock and crafts.

2. Decision-making within the household with regard to crops and livestock.

3. Technological skills available at the village level.

4. Impact of technological innovations on traditional patterns of labor allocation.

5. The relationship between allocation of land for export crops and food crops.

6. Village market and trade patterns, marketable crafts, market demands.

7. Energy sources, relative costs, desirability of use.

8. Effects of wage labor on village life.

9. Migration: positive and negative factors.

10. Participation in cooperative societies and in self-help or work groups.

11. Villagers' conceptions of the environment and its resources in relation to their problems.

12. Villagers' views of possible solutions to their problems in regard to energy use and natural resources.

PIG DEVELOPMENT SCHEME FOR WOMEN, BELIZE, CENTRAL AMERICA

Marion Marshall

I. Purpose: To provide village women, who traditionally raise small animals in Belize for food and money, with the education and opportunity to improve this resource base.

II. Target group: Women and children.

III. Immediate Potential Impact:

A. A greater supply of locally available meat (currently there are nationwide shortages although beef is being exported).

B. Increase in female income which has declined since the advent of cane cash-cropping. Women do not share in the financial benefits of cane to any great extent.

IV. Long Range Impact:

The family unit. It is hoped there will be spin-offs in the future as a result of educating women in better animal husbandry techniques, such as balanced diet and hence better nutrition. Smaller family size is a possibility as "middle class" aspirations come within reach.

V. Who: Minnesota University; Michigan State University which has developed a feed project reducing costs by 40%; the Belizean government.

VI. When: Michigan's project has been underway since 1976. Minnesota should begin fall, 1978.

VII. Where: Central Farms, the government agricultural experiment station in Belize, target villages probably in the North.

VIII. What: Pig development scheme.

VA7

IX. How: Activities:

1. Field delivery system of cheap feed.

2. Establish women's kin group co-operatives, since these groups traditionally work together, to manage small village piggeries. Educate women in more skilled animal husbandry techniques with low energy input.

3. Construct enclosures, a communal farrowing unit, obtain an imported boar to be rotated each year, etc. Plans for animal breeding and improving management.

4. Arrange market facilities.

5. Educate women in balancing diets with locally available food.

X. Cost: Partially offset by Heifer Project International. Graduate student's (3) stipends for one year, $5,000. Housing is provided free by the Belizean government. A Belizezan counterpart is also paid for by the government. A land rover, $6,000 is necessary.

XI. Sources of expertise: Professors at both universities will monitor the project. The Chief Veterinarian, and the Livestock Specialist of Belize, will be locally available.

XII. Scope: Broader than Belize. It is intended to serve as a model for other women's development projects in the world. Hence, an evaluation component conducted by a woman social scientist with agricultural training is considered important.

PAPAGO FOOD PRODUCTION PROJECT

Cynthia L. Anson

I. Food and Nutrition Conditions

Native Americans living on the Papago Reservation in southern Arizona experience food and nutrition problems very similar to those of rural people in developing countries. Poor food supply in terms of food quantity and quality creates widespread malnutrition for village residents. Daily diets are especially deficient in fresh foods (fruits, vegetables, eggs, and dairy products). The most obvious effect of inadequate food supply is the high incidence of nutrition-related disease.

Today most rural Papago depend on commercially produced and processed food available from reservation trading posts and off-reservation grocery stores. Since most village families are low-income, their purchasing power is limited. While income may be the most severe constraint on obtaining an adequate food supply, a second constraint is lack of transportation to commercial centers. People living in small, isolated villages must cope with a combination of long distances, poor roads, lack of vehicles, and high cost of gasoline. As a result, people usually shop at reservation trading posts where selection is poor and prices high. Finally, poor storage facilities due to lack of electrification or the cost of utilities further reduces the supply of fresh foods available in villages.

These conditions of deprivation are relatively recent. They have followed the breakdown of an indigenous system of food production, distribution, and consumption that provided an adequate, if not abundant, supply of good quality foodstuffs. Within a period of several decades, Papago villages have gone from virtual food self-sufficiency to food dependency. Traditionally the Papago practiced a form of flashflood farming that allowed them to raise a variety of crops on permanently cultivated fields in a harsh desert environment. After cattle raising was introduced by the Spanish, the two food production activities of farming and ranching were pursued jointly. A well defined system of inter-village exchange ensured the redistribution of food products and the giving of mutual aid during times of scarcity. Today flashflood farming has almost disappeared. Livestock raising persists but now is geared to commercial production, with most cattle destined for sale and shipment off the reservation.

The parallels with rural conditions in developing countries are distressingly apparent. For the Papago people as for the populations of the lesser developed countries, modernization has meant the rapid capitalization of a subsistence economy - resulting in the decline, even disappearance, of food production for local consumption, the commercialization of those agricultural activities that are maintained, and the search for cash income producing work on- or off-reservation. The scarcity of work on the reservation has caused many adults to seek jobs in towns, cities or nearby rural industry such as mines and corporation farms. Such labor migration may be seasonal or permanent. The effect of the rural exodus is to drain villages of young and middle aged adults, leaving a concentration of specially disadvantaged people - the elderly, single woman households, and children. The Papago custom of grandparents providing the primary care for their grandchildren increases the preponderance of very young and very old in the village populations. For most of these individuals, as well as for those who stay in their home villages because they cannot find work or refuse to pay the social cost of severing kin and village ties in order to obtain a job, the only source of cash to ensure basic survival is federal assistance payments.

Thus the end result of modernization is a lowered standard of living for those Papago remaining in their home villages, even though statistics show a rise in per capita income. As with many post-colonial LDCs, the negative effects are compounded by the patterns of dependency and passivity that are the residue of colonialism.

II. Strategies for Improving Food Conditions

An obvious strategy for ameliorating the problem of local food supply and nutrition is revival or intensification of production of food for direct consumption.

However, an analysis of the situation reveals some major obstacles to carrying out such a program. (1) The environmental obstacles - food production activities must be adapted to the desert environment. Conservative water use is the most stringent requirement. (2) The economic obstacles - while the Papago have adequate land available for subsistence food production, they have very limited access to the scarce resources of capital and technical information. Technical information available through extension services, libraries, scientific associations, even garden clubs, is a) often geared to large-scale, high cost, mechanized agriculture, or b) inaccessible to villagers who do not have phones, may not be literate, and so on, or c) not suited to the food customs and values of the Papago, who prefer their own foodstuffs and ways of preparation. (3) The social obstacles - namely the reluctance to try out new and experimental solutions; this reluctance is commonly recognized in studies of peasant societies the world over and is variously labeled 'the idea of limited good,' 'the factor of peasant-risk,' and 'the heavy hand of custom.

Several years ago three villages on the northern edge of the reservation identified this strategy as a partial solution and moved in this direction by reviving cultivation of the community fields. They also recognized the obstacles faced and called on Meals for Millions Foundation for informal advice and assistance. Out of this informal collaboration grew the Papago Food Production Project administered by Project PPEP, a rural social services agency for southern Arizona. The Project got underway in October of 1977.

III. PPEP's Papago Food Production Project

The purpose of the Project is to help rural Papago begin or expand local food production, with the goal of improving their nutritional conditions and increasing autonomy and self-sufficiency. The Project has two components - the delivery of limited material assistance and the development of a support system for the transmission of technical information pertaining to food production and processing. Design and implementation of the Project has been based on the following principles: creative use of local human and material resources, collaboration with existing agencies and institutions, reinforcement of community capacity for decision making and self-organization, and cultural adaptation.

A. Material Assistance

Through the Project, materials are made available to start home gardens, fruit tree cultivation, field crop cultivation, apiaries, and small animal raising (goats, pigs, chickens, rabbits). The Project is initially presented at village and district meetings so that discussion can follow the customary practices of group planning and action can be employed. Villagers have the choice of whether to participate, which type of project to embark on, and whether they wish to participate as individual households or as a community cooperative. Materials requested are delivered to the recipients. When possible, materials such as seeds, compost, or animals will be obtained from villagers themselves rather than off-reservation; for example, if a person receives a pig and breeds it, the resulting piglets can be purchased to distribute to others. The project encourages the use of traditional materials that are low-cost and fuel-conserving. For instance, through the Project we plan to distribute indigenous seed material collected from remaining Papago fields and attractively packaged to match commercial seeds; Papago seeds are uniquely adapted to the environment, fit dietary demands, and some are higher in nutritional content than their commercial counterparts.

Implementation of this Project depends heavily on collaboration with the Save the Children Federation, headed by Nancy Garcia of Sells. SCF has a network of community aides and schedule of monthly village council meetings that has provided the Project with a built-in implementation structure. The federally funded elderly program, 'Wise Ones', headed by Larry Martinez and the Community Action Program under Tony Ramon are other bases of central and community organization on which the Project depends. Institutional coordination and collaboration are largely responsible for the success of the Project to date.

B. Support System

The second component of the Project - a system to facilitate agricultural education and exchange of information with regard to food production activities - is just being developed. Conditions and needs dictate that the system must be designed to establish linkages between villages and centralized sources of information (such as the Indian Extension Service in Sells) and among villages themselves. Furthermore, the linkages must allow for a two-way flow of information. Finally, the information must be in a readily accessible form, usually oral or pictoral. In designing this component, we are borrowing from three related models of extension education used in developing countries to meet similar needs - the 'master gardener' model, the 'rural animation' model, and the 'facilitator' model. The Project support system will depend on non-formal extension techniques using paraprofessionals drawn from their village communities. The Community Action Program will sponsor a series of workshops to provide the representatives with an opportunity to obtain training and obtain information. They will then become resource people in their villages. The Indian Extension Service will provide technical expertise for the training sessions.

The information content will not, however, simply be flowing 'down' from centralized technical institutions. An unusual aspect of this support system proceeds from our conviction that traditional food production knowledge, based on generations of experience with desert conditions, constitutes an invaluable resource. As noted, this domain of Papago culture is rapidly disappearing. Through the workshops we hope to re-introduce this body of technical knowledge into the system. Since the ethos of Papago community life inhibits villagers still practicing traditional techniques from publicly identifying themselves as 'experts' by leading training sessions, the 'master gardener' model must be modified. Through intensive fieldwork techniques, we are recording surviving practices and techniques for use in the workshops. In this way, villagers will be giving as well as receiving information and training.

STUDY OF WOMEN'S PARTICIPATION IN AGRICULTURAL PRODUCTION IN A RURAL COMMUNITY IN THE WEST AFRICAN SAHEL: PROPOSAL ABSTRACT

Cynthia Anson

A micro-level analysis of women's participation in agricultural production in a rural community in the West African Sahel is proposed. The goal of this research is to help facilitate the full integration of rural women into the development process by providing pertinent quantitative and qualitative data to USAID and the host government for use in development project design. The specific aims will be: (1) to make a comprehensive description of the nature and significance of women's current role in local agricultural production; (2) to identify changes presently occurring in that role; (3) to discuss the practical implications of the findings in terms of the existing program for local and regional agricultural development; and, (4) to make specific recommendations regarding agricultural development projects that would both serve the needs of local women and contribute to an increase in local production.

The analysis will be based on intensive fieldwork carried out over the period of a year. Within the Sahelian zone, the countries of Upper Volta, Mali, and Niger have been selected as possible research locales for the following reasons: Among most ethnic groups practicing sedentary agriculture in these countries, women have a significant share in crop cultivation and stock raising; the desire of rural women in these countries to be integrated into agricultural development is well documented; and these are all countries in which USAID is actively involved in development efforts. The research site will be a single village; however, the results of the analysis should be generalizable to the ethnic group as a whole and relevant to the entire region. The fieldwork will be carried out by the principal investigator with the help of several local assistants and will cost approximately $18,000.

VILLAGE DEVELOPMENT PROJECTS IN NIGER: PROPOSAL

Cynthia L. Anson
and
Kathleen Cloud

In her paper on "Sex Roles in Food Production and Distribution Systems in the Sahel," Kathleen Cloud has demonstrated that Sahelian women make a substantial contribution to agricultural production among both nomadic pastoralists and sedentary cultivators. The processes of economic modernization, just beginning in the Sahel, already have had detrimental effects on the economic status of rural women, undermining their capacity to maintain, much less intensify, basic food production. Modernization is reducing women's traditional access to scarce resources such as land and labor. In addition, women are frequently barred from access to new and critical inputs - material assistance, technical training, credit and loans.

The need to actively aid women farmers and herders in the Sahel is now widely recognized. In some Sahelian countries, projects serving rural women have already been implemented (either as specifically designated women in development projects or as components of broader, integrated area development programs). Examples include: the AID-sponsored Operations Mils and Catholic Relief Services vegetable gardening projects in Mali, the UNICEF village development projects in Senegal, the AID Women in Development project directed by Carolyn Barnes and the UNESCO project headed by Scolastique Campaore in Upper Volta.

In contrast, the country of Niger has as yet no agricultural development projects designed to help rural women increase local food production. Some assistance is available to village women through Animation Rurale, a branch of the Ministry of Planning. Animation uses non-formal extension education techniques and a network of para-professionals consisting of animatrices at the village level and agents at the district level. However, the efforts of Animation have been concentrated on health care delivery. Despite this, village women have tried to use the Animation structure as a vehicle for spontaneously generated agricultural self-help projects. In this effort, the Federation of Nigerian Women has supported them, but there has been no donor agency support.

Rural women in Niger have <u>requested</u> agricultural development assistance, asking especially for (a) material assistance that would allow them to initiate small-scale, self-organized projects in the

areas of fruit and vegetable cultivation and small animal raising, and (b) additional technical training for animatrices and agents in the area of agriculture. For various reasons, donor agencies have been largely unaware of these requests.

Therefore, we propose that funds be made available for a team of American women to collaborate with representatives of women's groups in Niger at both the national and the village level to determine how donor agencies might assist women farmers in that country. Out of this collaboration, specific projects will be proposed and implemented. Cooperation and mutual participation in planning, design, and implementation will be the guiding principles.

The entire project consists of three elements. (1) The project planning team, consisting of two American women and three Nigerian women, will travel to one or more other Sahelian countries to observe the sorts of projects already under way. After this fact-finding tour, the team will draft a set of alternatives that could be successfully implemented in Niger. (2) These options will be presented to women's groups or small cooperatives formed expressly for this purpose. Each village group will determine its needs and select one or several projects. The necessary material assistance could then be provided to enable the women to initiate their projects. An example would be starter kits for a goat-breeding cooperative. (3) The simultaneous development of an adequate support system is crucial to the success of the village projects. This could be superimposed on the existing Animation structure and would involve using stages - short-term intensive education workshops - to reinforce and amplify the food production expertise of the animatrices and agents.

The first element of this project should be started immediately, as a direct response to requests issuing from the grass-roots level and conveyed through the Federation of Nigerian Women. This element would take six months to complete. The major sources of expertise for the project planning team would be the Federation of Nigerian Women, Animation Rurale, the UN/ECA Women in Development Center in Africa, and the Working Group on Arid Lands Women in Development in Tucson, Arizona. The team would be funded for seven person months, at an estimated cost of $48,000.

NON GOVERNMENTAL ORGANIZATIONS (NGO) UNICEF WOMEN'S WATER PROJECT

Helene B. Kadane

In June 1976 a group of International NGO Representatives accredited to UNICEF met and found that each had a local chapter or committee in Nairobi, Kenya. Each group, through its international headquarters, activated a local person to attend a meeting in Nairobi in September 1976. This group met and chose water as their basic need: this decision, and all other policy decisions, were made locally. Since water that has to be transported for domestic use in Kenya or elsewhere in East Africa, is carried by women, it is not surprising that water was the local group's first priority.

The purpose of the original NGO committee at headquarters was to continue the interest of UNICEF and its local affiliates, and it raised some seed money. The seed money was granted by the United Methodist Women ($5,000); IPPF (International Planned Parenthood Federation ($5,000 first gift; $25,000 second gift); a fund-raising party which raised approximately $500; assistance from UNICEF in the form of part time help from the UNICEF/Women's Development Officer and the very part time, but essential interest of the Regional Director of UNICEF in East Africa. A full-time coordinator was chosen by the local Nairobi Committee and paid with the seed money. At the present time the coordinator and her committee have found some sixteen or seventeen sites that can be developed for basic clean water supply and UNICEF at its May 1977 Executive Board meeting called the projects as "noted" i.e., it meets all UNICEF requirements but there are no funds currently available to finance it.

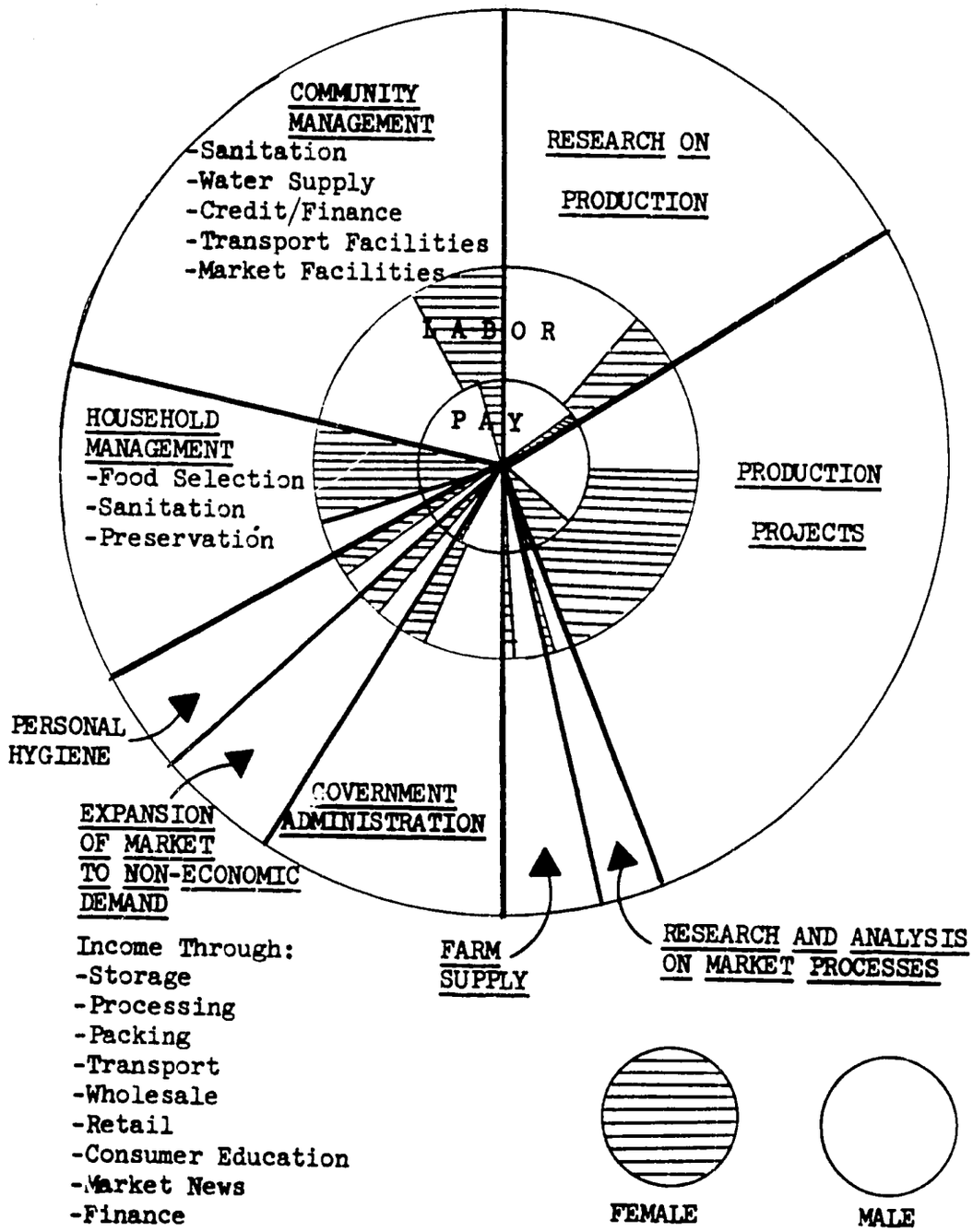
The usefulness of the project is that (1) all decisions were taken locally, (2) suitable personnel came forward locally, and (3) this pattern of organization can be reproduced elsewhere in the world as women become aware of this new possibility.

The difficulties encountered in the project have been the very high cost of transportation for the project coordinator, and the lack of a full-time secretary in Nariobi. The latter has always been a problem in East and West African projects and should be built into the design model in the very first instance. There is no language problem in this project but where translation is necessary its costs should be included in the design model.

A Conference Workshop Product (Tool for Understanding)
Distributed at the Conference

FOOD WHEEL (LABOR & PAY)

--Country Profile (Illustrative Model)
--Technical Assistance Agency Profile (Illustrative)

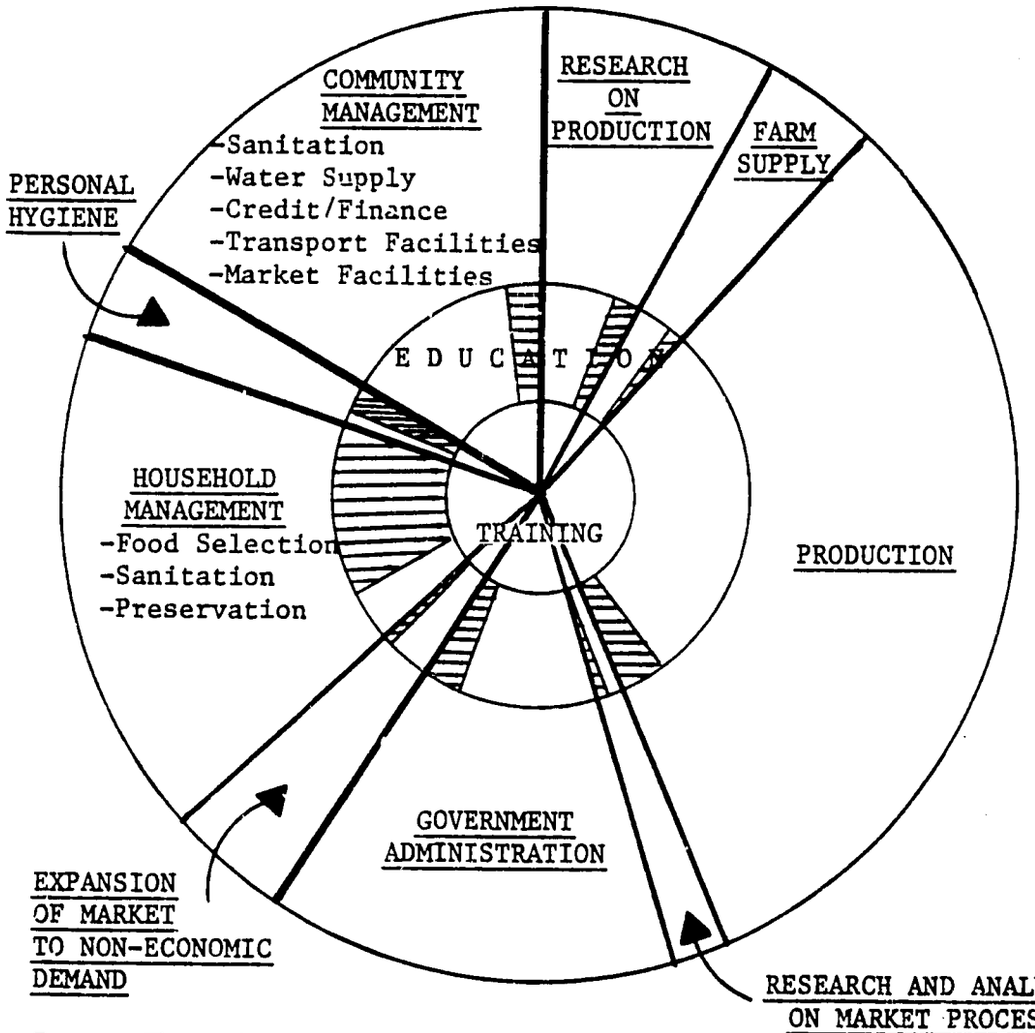


--Ms. Frances B. Johnson

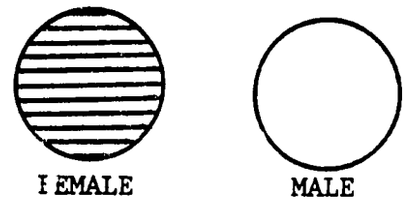
A Conference Workshop Product (Tool for Understanding)
Distributed at the Conference:

FOOD WHEEL (ACTUAL INVESTMENT)

--Country Profile (Illustrative Model)
--Technical Assistance Agency Profile

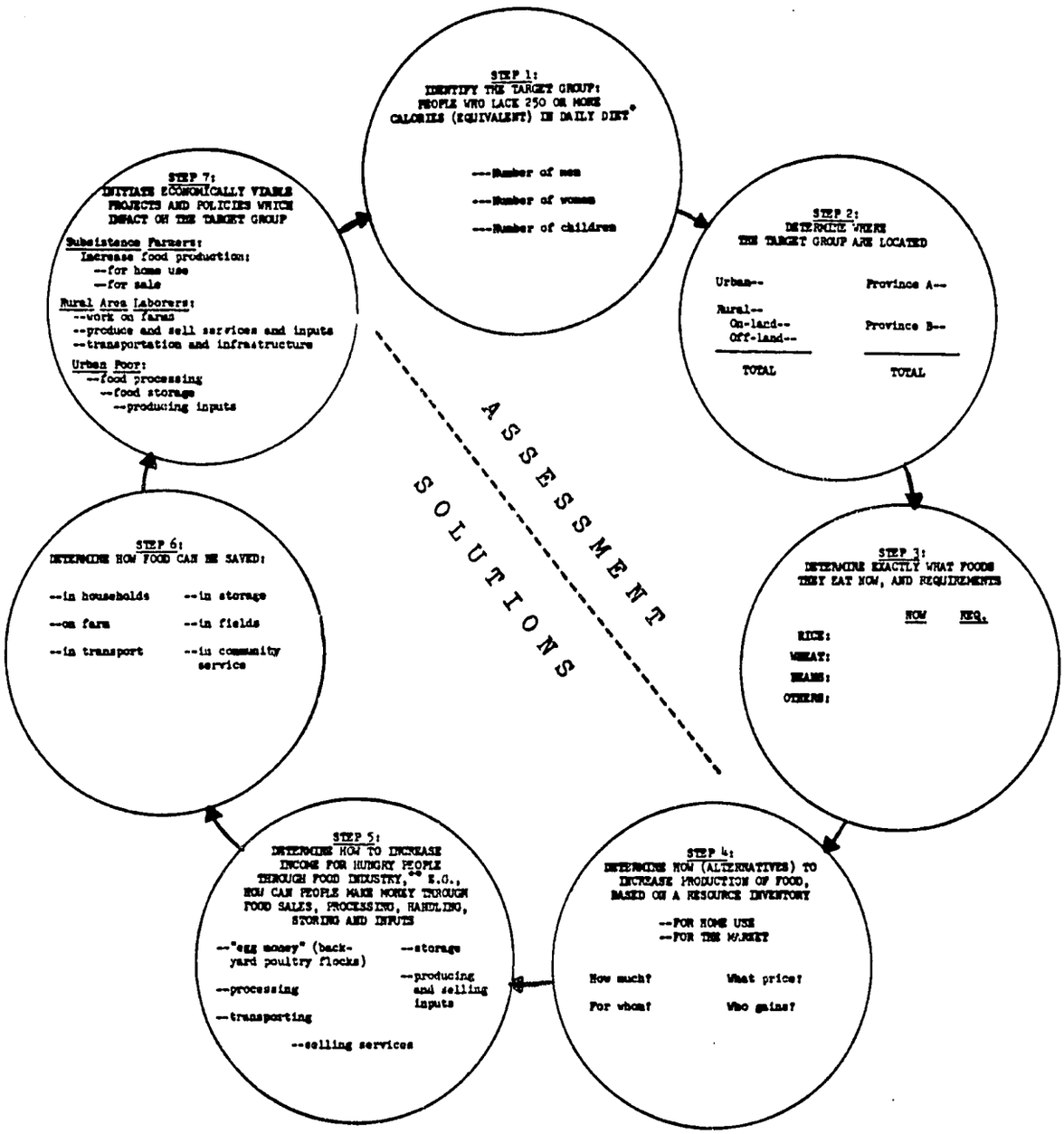


Income Through:
-Storage
-Processing
-Packing
-Transport
-Wholesale
-Retail
-Consumer Education
-Market News
-Finance



--Ms. Frances B. Johnson

A SAMPLE FLOW CHART TO GUIDE INVESTIGATIONS CONCERNING NATIONAL MACHINERY FOR ADEQUATE DAILY DIETS FOR ALL PEOPLE
--Revised by Frances Johnson, January, 1978



---

* A recent World Bank study indicates the Third World contains 930 million people who meet this definition.

** Potential sources of income for hungry people: Developing countries earn $30 billion for 12 principle commodities they export (e.g., tea, coffee, cocoa), but consumers in developed countries pay $200 billion for the same commodities in processed and packaged form. (Source: ul Haq)

APPENDIX C

WOMEN AND FOOD DOCUMENTS

WOMEN AND FOOD: The World Food Conference

THE RIGHT TO FOOD RESOLUTION: U.S. Senate 1976

WOMEN IN DEVELOPMENT POLICY: USAID

TITLE XII - FAMINE PREVENTION AND FREEDOM FROM HUNGER: Foreign Assistance Act as Amended

PLAN OF ACTION FOR THE INTEGRATION OF WOMEN IN DEVELOPMENT IN AFRICA: U.N. Economic Commission for Africa

WOMEN AND FOOD

The World Food Conference

Considering that the major part of the required increase in food production must occur in the developing countries if the present tragedy of starvation and malnutrition for uncounted millions is not to continue,

Recognizing that rural women in the developing world account for at least fifty percent of food production,

Knowing that women everywhere generally play the major role in procurement and preparation of food consumed by their families,

Recognizing the important role of the mother in the health development of the future generation through proper lactation and furthermore that mothers in most cultures are the best source of food for their very young children,

Reaffirming the importance of the World Health Assembly resolution on lactation in May this year,

1. Calls on all governments to involve women fully in the decision-making machinery for food production and nutrition policies as part of total development strategy.

2. Calls on all governments to provide women in law and fact the right to full access to all medical and social services, particularly special nutritious food for mothers and means to space their children to allow maximum lactation, as well as education and information essential to the nurture and growth of mentally and physically healthy children.

3. Calls on all governments to include in their plan provision for education and training for women on equal basis with men in food production and agricultural technology, marketing and distribution techniques, as well as consumer, credit and nutrition information.

4. Calls on all governments to promote equal rights and responsibilities for men and women in order that the energy, talent and ability of women can be fully utilized in partnership with men in the battle against world hunger.

THE RIGHT TO FOOD RESOLUTIONS

As Passed By the Senate (S. Con. Res. 138 September 16, 1976, by voice vote)

WHEREAS in this Bicentennial Year we reaffirm our national commitment to the inalienable right of all to life, liberty, and the pursuit of happiness, none of which can be realized without food to adequately sustain and nourish life, and we recall that the right to food and freedom from hunger was set forth in the Universal Declaration of Human Rights and in the World Food Conference Declaration of 1974; and

WHEREAS the report entitled "The Assessment of the World Food Situation" prepared for the 1974 World Food Conference, estimated that four hundred and sixty million persons, almost half of them young children, are malnourished; and

WHEREAS nearly half of the human race lives on diets seriously deficient in proteins or other essential nutrients; and

WHEREAS most of this hunger and malnutrition is suffered by the poor in developing countries whose poverty prevents them from obtaining adequate food; and

WHEREAS the demand for food is accelerating and the unprecedented growth in population will add a billion persons to the world's population in less than 15 years; and

WHEREAS the Food and Agriculture Organization, and other recognized authorities, currently estimate that by 1985 the developing countries will experience an annual food deficit of 85 million tons; and

WHEREAS it is in the interest of the United States and all nations to overcome food shortages which cause human suffering and generate economic and political instability; and

WHEREAS the United States proposed, and all nations at the World Conference of 1974 accepted, the bold objective "that within a decade no child will go to bed hungry, that no family will fear for its next day's bread, and that no human being's future and capacities will be stunted by malnutrition"; and

WHEREAS the international community has repeatedly urged the industrialized nations to increase their official development assistance to 0.7 percent of their total national production (GNP); and

WHEREAS the elimination of global hunger and malnutrition cannot succeed without expanded self-help efforts by the developing countries; Now, therefore, be it

RESOLVED by the House of Representatives (the Senate concurring), That it is the sense of Congress that

(1) the United States reaffirms the right of every person in this country and throughout the world to food and a nutritionally adequate diet; and

(2) the need to combat hunger shall be a fundamental point of reference in the formulation and implementation of United States policy in all areas which bear on hunger, including international trade, monetary arrangements, and foreign assistance; and

(3) in the United States, we should seek to improve food assistance programs for all those who are in need, to ensure that all eligible recipients have the opportunity to receive a nutritionally adequate diet, and to reduce unemployment and ensure a level of economic decency for everyone; and

(4) the United States should emphasize and expand its assistance for self-help development among the world's poorest people, especially in countries seriously affected by hunger and malnutrition, with particular emphasis on increasing food production and encouraging more equitable patterns of food distribution and economic growth; and such assistance in order to be effective, should be coordinated with expanded efforts by international organizations, donor nations, and the recipient countries to provide a nutritionally adequate diet for all.

---

unofficial transcript

WOMEN IN DEVELOPMENT POLICY

AGENCY FOR INTERNATIONAL DEVELOPMENT
WOMEN IN DEVELOPMENT OFFICE

It is now United States Government policy to make a conscious effort to integrate women in the development process and improve their status thus assisting the total development effort. This policy covers the work of the Agency for International Development as well as the U.S. participation in and contributions to international bodies. This U.S. policy preceded International Women's Year and the establishment of the U.N. Decade for Women (1976-85). It grew out of the resurgent U.S. women's movement ofthe late 1960's and the work of the UN Status of Women Commission. Although the U.S. Constitution does not guarantee the equal rights of men and women the UN Charter specifically does.

The Government's program of development assistance is aimed at helping people and societies. It gives "the highest priority to undertakings submitted by governments which directly improve the lives of the poorest of their people and their capacity to participate in the development process," according to the New Directions legislation. That same legislation also includes a specific provision which calls on those administering U.S. development aid:

> "To give particular attention to those programs, projects and activities which tend to integrate women into the national economies of developing countries, thus improving their status and assisting the total development effort."

Section 305 of the Foreign Assistance Act of 1961 requests the President to instruct:

> "Each representative of the United States to each international organization of which the United States is a member...to carry out their duties with respect to such organizations in such a manner as to encourage and promote the integration of women into the national economies of member and recipient countries and into professional and policy-making positions with such organizations, thereby improving the status of women."

204

A 1977 amendment to that section adds the following sentence:

> "The President is further requested, in making United States contributions to such organizations, to take into account the progress, or lack of progress, of such organizations in adopting and implementing policies and practices which encourage and promote the integration of women into the national economies of member and recipient countries, and into professional and policy-making positions within such organizations, in accordance with the World Plan of Action of the Decade for Women."

The women in development policy is a flexible one of adapting to local situations or conditions as they currently exist, identifying opportunities for constructive change, and taking both a long and short term view. It involves defining what the reality is, not dealing with the female half of society in an idealized or preconceived way. It involves listening to women as participants in the development process, not deciding on the basis of what men think they ought to do or want. It involves understanding what developmental change means to a particular culture and its traditions, not assuming that one half of society can change and the other half keep the old culture and traditions. And it involves doing all this as a society is changing. Thus women in development is not a static policy. Rather, it can be considered a concept, a goal, an activity and a process. Success or failure is not easily measured because some results can only be measured over time and a variety of factors or inputs may be responsible for a particular result.

Studies are necessary to determine what roles women play in a particular society, what economic contribution they do make, what can be done to increase their productivity or their incomes, encourage a decrease in fertility, and raise their status in comparison to other members of their society. Sometimes women-specific or women-only projects are necessary to build the capacity of the female sector of society to become active participants in a society. These projects may relate to increasing a family's health and nutrition or they may be aimed at increasing the woman's ability to earn cash or increase food production. In some societies the teaching of sewing, handicrafts and nutrition may be assigning the woman to the home and sex-segregating the economic activity. In other societies these activities may be important steps in that society's development.

Development means change. Change affects all segments of developing societies including the relationships between males and females and their roles and status. Although women's roles and status may vary, from country to country, and even vary within country depending on social class, geography or religion, discrimination against women economically, socially and politically is universal. These

patterns of discrimination are so deeply ingrained in all people and societies that a conscious effort must be made to identify the reality of women's lives--to find out what women do beyond being wives and mothers. When men migrate to cities, mines, oil fields, or large agricultural areas in search of paid work, women are often left behind and assume new roles in the local economy. Although women are half the population in every society, their economic contribution to societies--developing or industrial--is rarely measured or considered. When they are working outside the home for wages, they are usually considered the reserve labor force, not primary workers. The work women do in the home, as unpaid family workers, and as agricultural producers, is rarely counted in GNP or other economic indicators.

The purpose of the Women in Development office at AID is to provide central policy and program guidance, formulate Agency strategy, review Agency progress, support research and disseminate information on the role of women in development. The Office works with other AID bureaus, offices, and missions who are responsible for developing, funding, and implementing women in development projects country-by-country and for integrating women into projects as planners, designers and beneficiaries. Current priority areas of the Women in Development Office are:

--education and training of girls and women in an attempt to narrow the gap in literacy rates between boys and girls, men and women, and to provide an educational background and training for economic activities;

--studies of the extent and impact of the female-headed household in developing countries to determine what the situation actually is and what implications a large number of these households have on an economy. Patterns of migration and workforce deployment may be integral parts of this study;

--support for the development of women's organizations which work with indigenous groups, and identification of the needs women's organizations can fill in developing individual, group or community capacity for development;

--studies of the relationship between legal rights of women and development - especially as marriage and family law or practices prevent women from holding property, obtaining credit or controlling money;

--women's role in food and agriculture and the meeting of basic human needs.

--identifying scholars doing research on women and development issues and possible consultants or contractors who could serve on design teams or as resources for the Agency's Washington Office and missions.

TITLE XII--FAMINE PREVENTION AND FREEDOM FROM HUNGER
Foreign Assistance Act as Amended

Sec. 296. General Provision.--(a) The Congress declares that, in order to prevent famine and establish freedom from hunger, the United States should strenghten the capacities of the United States land-grant and other eligible universities in program-related agricultural institutional development and research, consistent with sections 103 and 103A, should improve their participation in the United States Government's international efforts to apply more effective agricultural sciences to the goal of increasing world food production, and in general should provide increased and longer term support to the application of science to solving food and nutrition problems of the developing countries.

The Congress so declares because it finds--

(1) that the establishment, endowment, and continuing support of land-grant universities in the United States by Federal, State, and country governments has led to agricultural progress in this country;

(2) that land-grant and other universities in the United States have demonstrated over many years their ability to cooperate with foreign agricultural institutions in expanding indigenous food production for both domestic and international markets;

(3) that, in a world of growing population with rising expectations, increased food production and improved distribution, storage, and marketing in the developing countries is necessary not only to prevent hunger but to build the economic base for growth, and moreover, that the greatest potential for increasing world food supplies is in the developing countries where the gap between food need and food supply is the greatest and current yeilds are lowest;

(4) that increasing and making more secure the supply of food is of greatest benefit to the poorest majority in the developing world;

(5) that research, teaching, and extension activities, and appropriate institutional development therefore are prime factors in increasing agricultural production abroad (as well as in the United States) and in improving food distribution, storage, and marketing.

(6) moreover, that agricultural research abroad has in the past and will continue in the future to provide benefits for agriculture in the United States and that increasing the availability of food of higher nutritional quality is of benefit to all; and

(7) that universities need a dependable source of Federal funding, as well as other financing, in order to expand, or in some cases to continue their efforts to assist in increasing agricultural production in developing countries.

(b) Accordingly, the Congress declares that, in order to prevent famine and establish freedom from hunger, various components must be brought together in order to increase world food production, including--

(1) strengthening the capabilities of universities to assist in increasing agricultural production in developing countries;

(2) institution-building programs for development of national and regional agricultural research and extension capacities;

(3) international agricultural research centers;

(4) contract research; and

(5) research program grants.

(c) The United States should--

(1) effectively involve the United States land-grant and other eligible universities more extensively in each component;

(2) provide mechanisms for the universities to participate and advise in the planning, development, implementation, and administration of each component; and

(3) assist such universities in cooperative joint efforts with--

(A) agricultural institutions in developing nations, and

(B) regional and international agricultural research centers, directed to strengthening their joint and respective capabilities and to engage them more effectively in research, teaching, and extension activities for solving problems in food production, distribution, storage, marketing, and consumption in agriculturally underdeveloped nations.

(d) As used in this title, the term "universities" means those colleges or universities in each State, territory, or possession of the United States, or the District of Columbia, now receiving, or which may hereafter receive, benefits under the Act of July 2, 1862 (known as the First Morrill Act), which are commonly known as "land-grant" universities; institutions now designated or which may hereafter be designated as sea-grant colleges under the Act of October 15, 1966 (known as the National Sea Grant College and Program Act), which are commonly known as sea-grant colleges; and other United States colleges and universities which--

(1) have demonstrable capacity in teaching, research, and extension activities in the agricultural sciences; and

(2) can contribute effectively to the attainment of the objectives of this title.

(e As used in this title, the term "Administrator" means the Administrater of the Agency for International Development.

(f) As used in this title, the term "agriculture" shall be considered to include fishermen and other persons employed in cultivating and harvesting food resources from salt and fresh waters.

Sec. 297. General Authority--(a) To carry out the purposes of this title, the President is authorized to provide assistance on such terms and conditions as he shall determine--

(1) to strengthen the capabilities of universities in teaching, research, and extension work to enable them to implement current programs authorized by paragrapsh (2), (3), (4), and (5) of this subsection, and those proposed in the report required by section 300 of this title;

(2) to build and strenghten the institutional capacity and human resources skills of agriculturally developing countries so that these countries may participate more fully in the international agricultural problem-solving effort and to introduce and adapt new solutions to local circumstances;

(3) to provide program support for long-term collaborative university research on food production, distribution, storage, marketing, and consumption;

(4) to involve universities more fully in the international network of agricultural science, including the international research centers, the activities of international organizations such as the United Nations Organization, and the institutions of agriculturally developing nations; and

(5) to provide program support for international agricultural research centers, to provide support for research projects identifiers for specific problem-solving needs, and to develop and strengthen national research systems in the developing countries.

(b) Programs under this title shall be carried out so as to--

(1) utilize and strengthen the capabilities of universities in--

(A) developing capacity in the cooperating nation for classroom teaching in agriculture, plant and animal sciences, human nutrition, and vocational and domestic arts and other relevant fields appropriate to local needs;

(B) agricultural research to be conducted in the cooperating nations, at international agricultural research centers, or in the United States;

(C) the planning, initiation, and development of extension services through which information concerning agriculture and related subjects will

be made available directly to farmers and farm families in the agriculturally developing nations by means of education and demonstration; or

(D) the exchange of educators, scientists, and students for the purpose of assisting in successful development in the cooperating nations;

(2) take into account the value to United States agriculture of such programs, integrating to the extent practicable the programs and financing authorized under this title with those supported by other Federal or State resources so as to maximize the contribution to the development of agriculture in the United States and in agriculturally developing nations; and

(3) whenever practicable, build on existing programs and institutions including those of the universities and the United States Department of Agriculture and the United States Department of Commerce.

(c) To the maximum extent practicable, activities under this section shall (1) be designed to achieve the most effective interrelationship among the teaching of agricultural sciences, research, and extension work, (2) focus primarily on the needs of agricultural producers, (3) be adapted to local circumstances, and (4) be carried out within the developing countries.

(d) The President shall exercise his authority under this section through the Administrator.

Sec. 298. Board for International Food and Agricultural Development. --(a) To assist in the administration of the programs authorized by this title, the President shall establish a permanent Board for International Food and Agricultural Development (hereafter in this title referred to as the "Board") consisting of seven members, not less than four to be selected from the universities. Terms of members shall be set by the President at the time of appointment. Members of the Board shall be entitled to such reimbursement for expenses incurred in the performance of their duties (including per diem in lieu of subsistence while away from their homes or regular place of business) as the President deems appropriate.

(b) The Board's general areas of responsibility shall include, but not be limited to--

(1) participating in the planning, development, and implementation of

(2) initiating recommendations for, and

(3) monitoring of,

the activities described in section 297 of this title.

(c) The Board's duties shall include, but not necessarily be limited to--

(1) participating in the formulation of basic policy, procedures, and criteria for project proposal review, selection, and monitoring;

(2) developing and keeping current a roster of universities---

(A) interested in exploring their potential for collaborative relationships with agricultural institutions, and with scientists working on significant programs designed to increase food production in developing countries,

(B) having capacity in the agricultural sciences,

(C) able to maintain an appropriate balance of teaching, research, and extension functions,

(D) having capacity, experience, and commitment with respect to international agricultural efforts, and

(E) able to contribute to solving the problems addressed by this title;

(3) recommending which developing countries could benefit from programs carried out under this title, and the identifying those nations which have an interest in establishing or developing agricultural institutions which engage in teaching, research, or extension activities;

(4) reviewing and evaluating memorandums of understanding or other documents that detail the terms and conditions between the Administrator and universities participating in programs under this title;

(5) reviewing and evaluating agreements and activities authorized by this title and undertaken by universities to assure compliance with the purposes of this title;

(6) recommending to the Administrator the apportionment of funds under section 297 of this title; and

(7) assessing the impact of programs carried out under this title in solving agricultural problems in the developing nations.

(d) The President may authorize the Board to create such subordinate units as may be necessary for the performance of its duties, including but not limited to the following:

(1) a Joint Research Committee to participate in the administration and development of the collaborative activities described in section 297 (a) (3) of this title; and

(2) a Joint Committee on Country Programs which shall assist in the implementation of the bilateral activities described in sections 297 (a) (2), 297 (a) (4), and 297 (a) (5).

(e) In addition to any other functions assigned to and agreed to by the Board, the Board shall be consulted in the preparation of the annual report required by section 300 of this title and on other agricultural development activities related to programs under this title.

Sec. 299. Authorization.--(a) The President is authorized to use any of the funds hereafter made available under section 103 of this Act to carry out the purposes of this title. Funds made available for such purposes may be used without regard to the provisions of section 110(b), 211 (a), and 211 (d) of this Act.

(b) Foreign currencies owned by the United States and determined by the Secretary of the Treasury to be excess to the needs of the United States shall be used to the maximum extent possible in lieu of dollars in carrying out the provisions of this title.

(c) Assistance authorized under this title shall be in addition to any allotments or grants that may be made under other authorizations.

(d) Universities may accept and expend funds from other sources, public and private, in order to carry out the purposes of this title. All such funds, both prospective and inhand, shall be periodically disclosed to the Administrator as he shall by regulation require, but no less often than in an annual report.

Sec. 300. Annual Report. --The President shall transmit to the Congress, not later than April 1, of each year, a report detailing the activities carried out pursuant to this title during the preceding fiscal year and containing a projection of programs and activities to be conducted during the subsequent five fiscal years. Each report shall contain a summary of the activities of the Board established pursuant to section 298 of this title and may include the separate views of the Board with respect to any aspect of the programs conducted or proposed to be conducted under this title.

PLAN OF ACTION

FOR THE INTEGRATION OF WOMEN IN DEVELOPMENT IN AFRICA

United Nations Economic Commission for Africa

The Plan of Action for the Integration of Women in Development in Africa is the outgrowth of guidelines drawn up at a regional seminar convened in Addis Ababa in June 1974. Because the vast majority of African people still live in rural areas where poverty is often acute, the Plan gives greater attention to action to improve the quality of rural life rather than action directed to urban areas, and suggests both short and long term strategies.

The condition of women and current activities of governments vary throughout the region. Broad agreement was reached on several general areas deserving priority attention. Expanding opportunities in such fields as education and training, employment, health, and public life have been proposed as not only a matter of social justice, but also as significant means toward achieving developmental and desired population goals, and for the further enrichment of the culture and personality of all African peoples.

The Plan recognizes the need for appropriate machinery and administrative procedures, and states that efforts to widen opportunities for women will require action through governmental machinery, nongovernmental organizations, groups and individuals, all of which may be supported by international and regional organizations.

Suggested national machinery includes national commissions on women and development, women's bureaus or permanent secretariats of national commissions, interdepartmental bodies of experts consisting of men and women in various fields, and nongovernmental organization coordinating committees.

The regional machinery suggested is an African regional standing committee to coordinate the work of the national commissions, and the existing African Training and Research Centre for Women and the United Nations Economic Commission for Africa.

I. Plans for Action

A. Education and Training

1. Short-term compensatory programs for women and girls in literacy and other non-formal education projects.

2. Training programs for women at village levels in modern farming techniques and use of equipment, cooperatives, entrepreneurships, marketing, and other relevant training.

3. Attention to school curricula to ensure equal choices for boys and girls; revision of educational materials to fit national needs; inclusion of population education and family life education in curricula at all levels.

4. Provision of social and vocational guidance for boys and girls and encouraging girls to equip themselves for a wide choice of employment opportunities.

B. Employment

1. Promotion of employment policies and strategies to incorporate wage and salaried employment, cooperatives, self-employment for women.

2. Provision of public services and facilities, including child care, which support women in their multiple roles of employee, homemaker and mother.

3. Integration of manpower and education policies; equal access for women to all economic activities and application of equal pay; availability to women of credit, technical services and training.

4. Promotion of opportunities for employment of women in decision-making and policy positions.

5. Development of programs for integrated rural development to increase gainful employment for men and women; improvement of rural infractructure (roads, water, electricity, village-based services).

6. Provision of training, equipment, other necessities in recognition of the major role of rural women in agricultural and marketing sectors, and the need to increase their productivity as well as to lessen the burden on their lives; improvement of family life and life of rural societies.

C. Communications/Mass Media

1. Support of governmental and nongovernmental organizations for research on the mass media to determine the image of men and women it portrays, its influence in changing attitudes on traditional roles of women, and its capacity to stimulate legislative and cultural changes resulting in greater equality between men and women.

2. Vigilance by governmental and nongovernmental organizations over communications material to ensure that information is provided to men and women on the current situation of women and how it can be improved, on the changing roles of men and women, and on employment and training programs for the advancement of women.

3. Efforts by governmental and nongovernmental organizations to achieve a greater share for women of the decision-making positions in mass media employment.

D. Health, Nutrition, Social Services

1. Provision of easily accessible water supplies.

2. Strengthening of basic health services, using trained medical and paramedical services; provision of contraceptives with adequate followup of protective health care.

3. Nutrition education in all schools; improvement of local food production, processing, preparation, storage and conservation.

4. Unified health care delivery systems, child and maternal care; advice on growing and use of local foods.

5. Expansion of coverage of old age pensions, unemployment insurance, social welfare assistance.

E. Population

1. Advancing the minimum age of marriage where appropriate.

2. Institutionalizing national family planning programs and providing information and means to enable couples and individuals to determine the number and spacing of children and how to overcome sterility.

3. Involving men and women in programs which ensure an understanding of responsible parenthood.

4. Encourage family size appropriate to national objectives.

5. Promote an awareness of the health and infant mortality factors which result from adolescent and advanced age pregnancies.

6. Provision of services to improve the conditions of elderly persons, particularly in rural areas.

F. Research, Data Collection and Analysis

1. Promote collection of data and develop simple indicators on changing conditions and quality of life of the female populace, including that relevant to educational attainment, employment characteristics, food and nutrition, access to health services, availability and disposition of income.

2. Censuses and surveys to include data pertaining to urban and rural population, sex, age, marital status, family composition, skill levels and participation in both modern and traditional economic activities.

3. Measuring extent of women's activities re food production, water and fuel supplies, marketing, transportation, and participation in local and national planning and policy decisions.

4. Studies of causes and effects of prevailing images and roles of women.

5. Encouraging data collection as part of all programs; encouraging universities and other bodies to conduct research on family and household situations, proportion of female heads of households; engaging in data collection which delineates the economic, social and demographic benefits derived from the wider participation of women.

6. Carrying out studies on the effects of polygamy upon women, such as the economic and social security effects of polygamy on older wives.

G. Legislative and Administrative

1. Relevant action which will accord women equal rights with men in the field of civil law; equal status with men in marriage, such as free choice of spouse and consent to marriage, property rights, parental rights and duties;

a. to remove legal and other restrictions on dissemination of information concerning family planning, the sale and distribution of contraceptive devices;

b. to provide legal aid in rural and urban areas, if possible free of charge; and

c. to promote the ratification by national governments of conventions of the International Labour Organization (ILO), especially those accruing benefits to women.

APPENDIX D

ROSTER OF PARTICIPANTS

ROSTER OF CONFERENCE ATTENDEES

Abahusaim, Monira, 8111 E. Broadway #105, Tucson, Arizona 85710, 602-886-0572, Biochemistry and Nutrition Department, University of Arizona; Nutrition

Aguirre, Maria Teresa, AA 151123 el Dorado Bogota Columbia, 404993 Instituto Colombiano Agropecua-Rio-ICA, 674500; Food Education and Production.

Alabastro, Estrella F., Department of Food Science and Nutrition, College of Home Economics, University of the Philippines, Diliman, Quezun City, Philippines; Food Processing.

Allen, Hortense, 1455 W. Roller Coaster Road, Tucson, Arizona 85704, 602-887-1246, Foreign Wives' Club.

Anderson, Bruce H., Drawer A, Logan, Utah, 801-752-8282, CID-Executive Director, 801-752-4100, General Interest.

Anderson, Mrs. Paul, 11 E. Orange Grove Road #818, Tucson, Arizona 85704, 602-297-8046, Foreign Wives' Club.

Anderson, Sandra, 2217 E. Silver, Tucson, Arizona 85719, 602-325-0981, College of Nursing, University of Arizona 602-882-6150; Health

Angulo, Ana Cecilia Arboleda, Calle 77 #9-20 Apto 205 Bogota Columbia 559710, Instituto Colombiano de Bicnestar Familiar, 404136

Anson, Cynthia L., 2953 E. 17th St., Tucson, Arizona 85716, 602-325-0371, Project PPEP, Tucson, Arizona, 602-282-3553; Rural Development in Arid Lands.

Aremu, Odunola, Home Economics Education, School of Home Economics, University of Arizona, Tucson, Arizona 85721, Federal Department of Agriculture PMB 5471, Ibadan; Home Economics Extension and Nutrition Education.

Bainton, Barry, Home Economics, University of Arizona, Tucson, Arizona 85721; Human Development, Anthropology-International Development.

Baldwin, Ruth E., Department of Food Science and Nutrition, University of Missouri-Columbia, Columbia, Missouri 65201, Home: 314-445-6558, Work: 314-882-4042, Food quality, food supply nutrition.

Barnes, Carolyn, AID/Ouaga, Department of State, Washington, D.C. 20520, USAID; Communication support for development, non-formal education, Food technology, Agriculture, Project Management.

Barrins, Phyllis C., 2023 E. Adams St., Tucson, Arizona 85719, 602-327-7956; Self employed - marriage and family counselor.

Barroso, Maria Angela Thomaz, 1201 E. Drachman #208, Tucson, Arizona 85719, 602-622-8177, University of Arizona.

Basham, Charles W., Department of Horticulture, Colorado State University, Ft. Collins, Colorado, 80523, 303-484-5054; Agriculture-production, education and development.

Bay, Edna G., c/o African Studies, University of Illinois, 1208 W. California 61801, 217-351-4134; Women in West Africa.

Beane, Laura, R#1 - Holwis Farm, Ft. Atkinson, Wisconsin 53538; Agriculture.

Blockwick, Jessma, 100 Maryland Ave. N.E., Washington, D. C. 20002, 703-356-0717, United Methodist Church Board of Church and Society (Dept. of Population); Women's rights and potentialities, population issues.

Bonnell, Susanne, 217 Baja Ave., Davis, California 85616; University of California at Davis; Agriculture training for women, Women in Extension-Women in Rural Development.

Bragg, Janet H., 5833 E. 5th Street, Tucson, Arizona 85711, 602-745-2657; Home Economics.

Bratcher, Helen, 1011 First Avenue, c/o Catholic Relief Services, New York, New York, 10022, 212-838-4700; Nutrition Education.

Braveboy-Wagner, Jacqueline A., 2720 N. Montezuma, Tucson, Arizona 85712, 602-325-4726, University of Arizona; International Politics and Economics.

Brooks, Marjory, 1005 Calle del Encanto, Las Cruces, New Mexico, 88001, 505-525-9560, New Mexico State University, Department of Home Economics; Counseling of Women.

Brooks, Mila, 1607 Silver Lake Road, Topeka, Kansas 66608, 913-233-9706; Nutrition, population and health.

Bucbelew, Clara V., 215 W. Oro Valley Drive, Tucson, Arizona 85704, 602-297-0629, Representative N.R.E.C.A. Women's Organization, Washington, D. C.; Health and Nutrition.

Buchanan, Barbara, 3150 E. Prince, Tucson, Arizona 85716, 602-326-6385, Southern Counties Mental Health Services, Tucson, Arizona; Urban poor in American Southwest, Education of persons outside the "Mainstream".

Bucheli, Sonia Alvarez de, Directora Distrito Especial de Bogota Columbia, Plan Nacional de Alimentacion y nutricion, 533618; Planeacion Nacional Colombia.

Buck, Aureline D., Rt. 3 Box 49, Abbeville, Louisiana 70510, 318-893-2060; Home Economics - Rice Production.

Burke, Mary P., 3700 13th St., N.E., Washington, D. C. 20017, 301-927-1252, Center of Concern; Women in development in the context of changing world order, Women and international socio-economics.

Burt, Beryl, 245 N. Main, Tucson, Arizona 85705, 602-624-3070, University of Arizona; Home Economics and International Extension Education.

Burton, Mary E., Box 3470, New Mexico State University, Las Cruces, New Mexico 88003, 505-524-0313; International Programs.

Caason, Jeannette B., 1401 Asbury Court, Hyattsville, Maryland 20782, 301-559-3782, A.I.D.: Women's programs in general.

Cabrera, Teresa Areas, Km 98 Carretera a Leon, zoomts al suk, 4181, Universidad Centroamericana; Nutrition-Deficiencis in Calovie protein in children.

Cain, Melinda, Denver Research Institute, Office of International Programs, University of Denver, Denver, Colorado 80208, 303-750-3890; Women in Africa.

Calloway, Doris Howes, Department of Nutritional Science, University of California, Berkeley, California 94720, 415-524-9133; Human Nutrition.

Castano, Maria-Teresa, 3401 N. Columbia #21-0, Tucson, Arizona 85712, 602-795-0288, University of Arizona (Education); Child Development and early education.

Caton, Douglas, A.I.D.

Chaar, Amel, Graduate Center Box 264, Pullman, Washington 99163, 209-335-6481, Washington State University; Food Science and Nutrition.

Chao, Chiou-Shya Yang, 3401 N. Columbus Blvd. #4-D, Tucson, Arizona 85712.

Chou, Lai-Lung, 3401 N. Columbus Blvd., #33G, Tucson, Arizona 85712, 602-326-3896.

Ciolek-Torrelo, Susan, 2541 E. Kleindale, Tucson, Arizona 85716, 602-326-4926, University of Arizona, Research Support Section Computer Center.

Cloud, Katherine, 4017 Camino de la Colina, Tucson, Arizona 85711, 620-327-0705, Greenfields School, Social Sciences, Later Law.

Cloud, Kathleen, Office of International Agriculture, Old Alumni Building, University of Arizona, Tucson, Arizona.

Cosminsky, Sheila, Associate Professor of Anthropology, Camden College of Arts and Sciences, Camden, New Jersey 08102.

Cowan, Ann, 2030 Calle Alta Vista, Tucson, Arizona 85719, 602-326-3721, Pima Community College; Anthropology-Women in Development Planning.

Cox, Milo L., School of Renewable Natural Resources, University of Arizona, Tucson, Arizona 85721, 602-884-2947; International Development.

Cox, Vivian L., College of Education, University of Arizona, Tucson, Arizona 85721, 602-884-1782; Early Childhood-Human Growth and Development.

Cummings, Elizabeth, 3010 E. 6th, Tucson, Arizona 85716, 602-327-8123, League of Women Voters; Multinational agriculture.

Darling, Mary E., 160 7ScN-1334 Eckles, University of Minnesota, St. Paul, Minnesota, 55108; Nutrition education and community organization.

De-Graft-Johnson, Susan Barbara, Accra Clinic, Independance Avenue, P. O. Box 7523, Ghana, West Africa 26939, USAID/Women and Development, Ghana; Paediatrics.

Delwarte, Doris J., 1720 W. Root Lane, Tucson, Arizona 85705, 602-888-6053, nutrition and food.

Diamond, Mary, 5815 Mina Vista, Tucson, Arizona, 602-299-3312, Meals for Millions; Nutrition.

Dodge, Herbert W., c/o American Embassy, USAID/HRA, Manila APO San Francisco 96528, USAID/Manila; Nutrition/Integration of Nutrition with Family Planning and Health.

Donaldson, Marilyn, 6617 Calle Betelgeux, Tucson, Arizona 85710, 602-747-3936, United Presbyterian Church USA (Presbyterial de Cristo).

Douglass, Edith, 2120 E. Hampton Street, Tucson, Arizona 85719, 602-793-0175; General (Nutrition, Health and vegetarian approach).

Dovlo, Florence E., P. O. Box M 20, Accra, Ghana, 75442, Food Research Institute; Food and Nutrition, Food Processing and Preservation.

Doyle, Mary Aloyse, ASIA Bureau, Agency for International Development, Washington, D.C., 20523, 702-524-6756, U. S. Foreign Service; Women - in Agriculture (ASIA Human Rights).

Doyle, Margaret D., Department Food Science and Nutrition, University of Minnesota, St. Paul, Minnesota 55108, 612-645-6358; International Nutrition.

Dreyer, Stanton E., Suite 916, 2101 "L" Street, N.W., Washington, D.C., 301-587-2957, Overseas Education Fund of the League of Women Voters; Women in Development - Food and Agriculture.

Dulansey, Maryanne L., 2130 P Street N.W. Suite 803, Washington, D. C. 20037, 202-223-8466, Consultants in Development; WID; Agriculture and Nutrition.

Dunn, Sister Clare, CSJ, 4751 E. Linden Street, Tucson, Arizona 85712, 602-271-3278, Arizona State Legislature; Women!

Dusenberry, Katie, 131 W. Congress, 11th Floor Administration Bldg., Tucson, Arizona 85701, 602-325-5717, Member Pima County Board of Supervisors (Tucson); Nutrition-Public Health.

Edwards, Mary, Universidad Politecnica, De Nicaragua Aptdo. 3595, Managua, 3458, Universidad Politicnica de Nicaragua; Education, Community development and nutrition.

Edwards, Wildring S., Department Home and Family Life, Texas Tech University, Lubbock, Texas 79409, 806-795-6362; Community Influences on Families.

Elliott, Elizabeth, Asst. Dean and State Leader, Home Economics Extension, College of Home Economics, Iowa State University, Ames, Iowa 50011, 515-233-2030; Nutrition Education - Family Planning - Program Evaluation.

Elzein, Badria, 724 E. 9th St., Apt. 3A, Tucson, Arizona 85719, 602-792-9662; Horticulture.

Estrada, Amara Betanco, Masaya-Iglesia de Sn. Miguel 1 1/2 cuadra arriba-#219, Nicaragua, 2928, Destrito Nacional of Managua; Food Distribution.

Fanning, Marina, Inter American Development Institute, 11 Dupont Circle, Washington, D.C., 202-332-0822; Nutrition, Health Care, Programs at the Village Level.

Ferguson, Nancy, Office of Arid Lands Studies, 845 N. Park Ave., University of Arizona, Tucson, Arizona 85719, 602-884-1955, Niger Natural Resources Planning Project; Agriculture, Ecology.

Ferry, Suzanne, Box 70, Corinne, Utah, 84307, Utah State University; Home Economics.

Finne, Grace W., World Bank, 1818 H. Street, N.W., Washington, D.C., 703-354-4847.

Fischer, Dorothy, 5801 W. Martingale Lane, Tucson, Arizona 85704, 602-297-7976, University of Arizona; Home Economics-Nutrition and Education.

Fischer, John L., 5801 W. Martingale, Tucson, Arizona 85704, 602-297-7976, CID/University of Arizona; Food/Agriculture and Rural Development.

Fogam, Margaret H., 7019 Georgia Ave. N.W. #312, Washington, D.C. 20012, 202-291-2921, Georgetown University; Rural Sociology (Women in Rural Development).

Foote, Gerri, 862 E. Glenn, Tucson, Arizona 85719, 602-624-4102; Nutrition and Food Science.

Forero, Maria V., 30 C Hasbrouck Apt., Ithaca, New York 14850, 607-257-4516, Cornell University; Food and Nutrition.

Fowler, Cary, P. O. Box 646, Chapel Hill, North Carolina 27514; General Research on hunger from political/economic/social standpoints.

Fraser, Arvonne S., 1253 4th St. S.W., Washington, D.C., 202-632-3992; AID/WiD.

Freeman, Constance J., 1527 S St. N.W., Washington, D.C.; Population/ Africa/General Development.

Fu Chi, Tan, 915 N. Tyndall, Tucson, Arizona 85719, 602-882-8795, nutritional biochemistry.

Futrell, Mary, P. O. Drawer HE, Mississippi State, Mississippi 39762, 601-323-7174, Mississippi State University; Nutrition.

Garber, Leanne, 9620 N. Quail Lane, Tucson, Arizona 85704, 602-297-0388; Horticulture.

Garcia, Nancy, P. O. Box 621, Sells, Arizona,602-383,2757, Save the Children Federation; Working with children and Families.

Gibbs, June, School of Home Economics, University of Arizona, Tucson, Arizona 85721, 602-325-2306; Nutrition.

Gonzalez, Julieta, 215 E. 17th Street, Tucson, Arizona 85701, 602-623-2290, Tucson Women's Commission.

Goodwin, Felix L., Room 103 Administration Bldg., University of Arizona, Tucson, Arizona 85721, 602-884-2744.

Graves, Patsy, 1346 Connecticut Ave, N.W., Washington, D.C. 20036, 202-726-2947, International Programs National Council of Negro Women, Inc.; Women in Development Rural Development; Leadership Training.

Harries-Belck, Nancy, School of Home Economics, Room 205C, University of Arizona, Tucson, Arizona 85721, 602-884-2536; Family as Eco-System, Extension Family Living Program.

Harrison, Gail Grigsby, Dept. of Family and Community Medicine, College of Medicine, University of Arizona, Tucson, Arizona 85724, 602-299-1225; Human nutrition and Public health.

Harvill, George G. (Mrs. Richard A.), 2943 E. Hawthorne, Tucson, Arizona, 85716, 602-325-3485; Foreign Wives Program.

Hayward, Peter B., 511 First Street, Encinitas, California 92024, 714-436-5882, University of California, San Diego, Dept. of Sociology; Central Africa.

Hegland, Sylvia, 513 E. 5th Street, Tucson, Arizona 85705, 602-792-0252; Member of the Hunger Project.

Henderson, Helen K., 5707 E. 6th St., Tucson, Arizona 85711, 602-296-8346, University of Arizona (Office of Arid Land Studies); Anthropology, Africa, Women in development.

Hickey, Margaret, 3940 E. Timrod Apt. 207, Tucson, Arizona 85711, 602-327-5013, AID/Dept. of State USA; Women in Development.

Houghton-Alico, Doann, Center for Research and Education, 1800 Pontiac Box 104, Denver, Colorado 80220, 303-355-6306, Center for Research and Education; Program design, Economic and Social Institutions in other countries.

House, Gail, Rt. 5 Box 352A, Lubbock, Texas 79407, 806-795-6774, Texas Tech University; Home Economics, Rural Development.

Howell, Barbara, Bread for the World, 110 Maryland Ave. N.E., Washington, D.C. 20012, 202-726-9422 or 202-544-3820, Bread for the World; U.S. Food policy which addresses basic causes of hunger - US and international.

Huggard, Marianne, 43-63 167th Street, Flushing, New York 11358, 212-539-3966, International Federation of University Women; Representative to the United Nations.

Hughes, Alison, 2223 E. Edison, Tucson, Arizona 85719, 602-881-0917, Tucson Women's Commission; Equality for Women.

Hull, Mrs. Herbert, 4040 W. Sweetwater Drive, Tucson, Arizona 85705, 602-622-5113, University of Arizona; Foreign Wives' Program.

Huraibi, Fatima Ali, Ministry of Agriculture, Sana'a, Yemen Arab Republic, Director of Fisheries Department, Ministry of Agriculture, Sana'a X.A.R.; Food Management and production.

Ibarra, Irma Toledo de, 6a Ave. G-46 Zona 10, Guatemala, 66374 or 80596, Guatemala President of Home Economics Association; Nutrition and Dietetics, Economy, Food Statiscs.

Jarquin, Horacio, Altamira D'Este 5a Etapa #5, Managua, Nicaragua, 61929, Nutritional Technical Committee of Nicaragua; Food production and distribution, Food price policy, food export-import policy.

Johnson, Donal D., Dean, College of Agriculture, Colorado State University, Ft. Collins, Colorado; CID/Chairman Board of Trustees.

Johnson, Frances Brigham, 3512 Saylor Place, Alexandria, Virginia 22304, 703-370-1251, Office of Women in Development, Agency for International Development, Washington, D.C.; Women in Development, Basic Human Needs and Human Rights.

Johnson, Gordon F.B., Mathias Hall, Colorado College, Colorado Springs, Colorado 80903; Economics, Ecology, and Human Rights.

Johnson, Susan C., Hinman Box 1789, Dartmouth College, Hanover, New Hampshire 03755, 603-643-9884, Dartmouth College Undergraduate; Fields of Development.

Jones, Harold, Dept. of State (AID), Room 2480-AFR/DR/ARD, Washington, D.C. 20520, 202-293-3937, Agency for International Development (AID); Agriculture.

Judson, Debbie, 1560 W. Roller Coaster Road, Tucson, Arizona 85704, 602-887-0935, University of Arizona; General.

Kadane, Helen B., 190 Voorhis Avenue, Rockville Centre, New York 11570, 516-536-4252, NGO World Food Crisis Comm., NGO International Women's Decade Comm.

Kassander, Helen, Office of Arid Lands Studies, 845 N. Park Ave., Tucson, Arizona 85719, 602-881-5259, University of Arizona 602-884-4925; Economic/Agricultural Development.

Ketterling, La Rose M., 1022 Circle Drive, Brookings, South Dakota 57006, 605-692-5779, South Dakota State University; Nutrition-Dietetics.

Kittle, Bonnie L., Save the Children Federation, 48 Wilton Road, Westport, Connecticut, 06880; Community Development, Health/Nutrition.

Kokuhirwa, Hilda, 303 University Apartments, Amherst, Massachusetts 01002, 413-549-2786, University of Massachusetts; Women's Education, Non-Formal Education.

Knorr, Amy Jean, School of Home Economics, University of Arizona, Tucson, Arizona 85721, 602-297-3457; Home Economics Education.

Knospe, Marvis, USAID/Costa Rica, APO New York, New York 09883, 24-46-42 or 22-55-66, Agency for International Development; Nutrition.

Kunz, Susan, 1021 N. Norton, Tucson, Arizona 602-325-9782 or 602-884-2150, University of Arizona; Nutrition.

Lackey, Alvin S., 727 Clark Hall, University of Missouri, Columbia, Missouri 65201, 314-847-3784 or 314-882-2633; International Development Program Administration.

Larson, Cecill, 2036 Krenwood Parkway, Minneapolis, Minnesota, Minnesota International Center; International Students and Visiters World Affairs.

Leeper, Donald S., 669 Doreen Way, Lafayette, California 94549, 415-283-8655, Consultant to AID and Private Sector; Food System Establishment and Entrepreneurial Development in LDC's.

Lennhoff, Sue, Tucson, Arizona.

Lester, Mrs. T. C., - 525 N. Entrada Ultima, Tucson, Arizona 85718, 602-888-9794, YWCA - Tucson.

Lewis, Margaret, Home Economics 31, Oregon State University, Corvallis, Oregon 97331; Nutrition.

Lewis, Martha Wells, 3512 Porter Street, N.W., Washington, D. C., 20016, 202-363-1431, National Farmers Union, International Federation of Agricultural Producers; Farm Women.

Littlefield, Sarah Jane, USAID/Indonsia, APO San Francisco 96356, 340001-Indonsia; Economic Development.

McCullah, Grace D., 1777 W. Camelback Road, Suite A-108, Phoenix, Arizona, 602-248-0184; Indian Development District of Arizona.

McFarland, Keith N., 3254 Sandeen Road, St. Paul, Minnesota 55112, 612-633-1179, University of Minnesota; Administration (Dean of College) Home Economics.

McGrath, Mary-Jean, University Center for Cooperatives, University of Wisconsin, 524 Lowell Hall, Madison, Wisconsin, 53706, 608-262-3251; Cooperatives and Development.

McFarlan, Kathleen, 1401 Binz, Houston, Texas 77006, 713-523-0882; The Hunger Project.

McNamara, Mrs. N., 16 Claxton Street, Adelaide, Australia 08-516-246, Aboriginal Training and Cultural Foundation; Education.

McNulty, Cynthia, 1011 N. Olsen, Tucson, Arizona 85719, 602-882-6300, College of Agriculture; International Fertility Problems, Population Planning and Nutrition.

McNulty, Jacqueline, P. O. Box 87, Bisbee, Arizona 85603, 602-432-2988; International Affairs.

Marcarian, Victoria, Dept. Plant Sciences, University of Arizona, Tucson, Arizona 85721, 602-297-8659; Plant Breeding and Crop Production.

Marotz-Baden, Romona, Dept. Family and Human Development, Utah State University, Logan, Utah, 801-752-4100; Food Production.

Martinez, Ligid, Calle 27 #37-20 Apto 50J, 694136; Instituto Colombiano de Bienestar Familiar.

Martinez, Muriel, Oficina INTA-Masaya Nicaragua A.C., 2425; Community development group and nutrition.

Marshall, Marion Louise, Dept. of Animal Science, University of Minnesota, St. Paul, Minnesota 55108; Small Animal production - Anthropology - Rural Women.

Matlock, W. Gerald, 211 Alumni Building, University of Arizona, Tucson, Arizona 85721, 602-884-1717; AGRIC Development.

Mejia, Eliva, Planeacion Nacional, Edificio Bachue 11-piso, Plan Nacional de Alimentacion y Nutricion, 828292-Columbia.

Meng, Jean, 2716 N. Magnolia Avenue, Tucson, Arizona 85712.

Metcalfe, Darrel S., 303 Agriculture Building, University of Arizona, Tucson, Arizona 85721; Agriculture.

Meydani, Simini, 1732 Lake Sherwood Dr., Ft. Collins, Colorado 80521, 303-221-3921, Colorado State University; Nutrition.

Miller, Frances C., 3111 East 4th Street, Apt. 149, Tucson, Arizona 85716, 602-793-1734; Early Childhood Education.

Miller, Lora Langworthy, 1311 E. 1st Street, Tucson, Arizona 85719, 602-882-0874, University of Arizona; Anthropology-Political and Legal; Women in Developing Nations.

Minette, Martha, 5707 Ladylane, Tucson, Arizona 85704, 602-888-0747, Member of Foreign Wives' Club; Journalism-Political Science.

Mohn, Andrea W., USAID, APO New York 09887, Tegucigalpa, Honduras, 22-7941-Honduras, USAID: Agriculture.

Montoya, Pia, 630-C S. Pantano Road, Tucson, Arizona 85710, 602-296-6425, University of Arizona; Economic Development.

Munguia, Norma L., Apdo Postal 859, Tegucgalpa, D.C., Honduras, 22-12-26 Honduras; Women in Rural Areas.

Nabhan, Gary, Rt. 6 Box 900, Tucson, Arizona 85703, 602-883-1380, Arizona Sonora Desert Museum; Arid land agriculture, nutrition.

Nawid, Semzil, 2146 E. 4th Street, Tucson, Arizona 85719, 602-623-5300, University of Arizona; Modern Middle Eastern History.

Neville, Mary C., Sana'a, Yemen Arab Republic, c/o Dept. of State, Agency for International Development (AID), Washington, D.C. 20520, 6510 Belarbor, Houston, Texas; Women in Development.

Niethammer, Carolyn, 604 E. 1st Street, Tucson, Arizona 85705, 602-623-8025; Edible Wild Plants, Women's Medicine.

Nogueira, Maria Luiza Barbosa, Dept. Plant Pathology, University of California, Riverside, California 92521, 714-787-4135, Instituto Biologico-Secretaria da Agricultura do Est. de Sao Paulo-Brazil; Food Microbiology.

North, Jeanne F., 6500 Bannockburn Drive, Bethesda, Maryland 20034, 301-320-4325; Sociology of Women, Community, organization; Social work.

Nowels, Martha, 199 N. Stone, Tucson, Arizona 85701, 602-622-3267; Communication.

Parr, Carol, 805 15th Street N.W., Suite 822, Washington, D.C. 20520, 202-638-1961, WEAL Educational and Legal Defense Fund; Implementing World Plan of Action, Women in Policy making positions.

Paul, Pauline C., 260 Bevier Hall, University of Illinois, Urbana, Illinois 61801, 217-333-3790, Director, School of Human Resources and Family Studies; Food Service and food utilization.

Pearson, Paul B., Dept. Nutrition and Food Science, University of Arizona, Tucson, Arizona, 85711, home: 602-745-2825; work: 602-884-1971, nutrition, community behavior and development, interrelations.

Pelto, Gretel H., Dept. of Nutritional Sciences U-17, University of Connecticut, Storrs, Connecticut 06268, 203-486-3634; Community Nutrition.

Pitono, Djoko, 1425 E. Speedway -F, Tucson, Arizona 85719, 602-624-6149; Appropriate Technology.

Poley, Janet, Assistant Director International, Room 3529, USDA So. Bldg., Washington, D.C. 20250, 202-447-4773; Women in Development, Nutrition.

Rainey, Mary C., Family Study Center, Home Economics West, Oklahoma State University, Stillwater, Oklahoma 74074, 405-624-6697; Role of Family in Development, Family Ecology.

Ramirez, Beatriz de, Calle 36A #3CN-40 Cali-Colombia, 551636; Universidad del Valle Cali Colombia.

Ramsey, Eleanor, 2880 La Grange Circle, Boulder, Colorado 80303, 303-493-1230, Aspen Institute; Food and Climate.

Rengel, Patricia L., Office of International Justice and Peace, 1312 Mass Ave., N.W., Washington, D.C. 20005, 202-659-6812, U. S. Catholic Conference; Human Rights Issues Women in Development.

Rhodes, Kathleen, New York City College of Human Ecology, Cornell University, Ithaca, New York 14853, 607-256-7770, Professor-Dept. of Community Service Education; Rural Development-Women's Education and Training.

Riddle, Katharine P., P. O.Box D-11, Vail, Arizona 85641, 602-882-6244, Nourishing space for women; Enabling women to understand how they nourish themselves and others.

Rignall, Raymond, CARE, Inc., 660 First Avenue, New York, New York 10016, 212-632-3110; International Community Development.

Robey, Carol Waiser, 5447 E. 5th St., Suite 227, Tucson, Arizona 85711, 602-325-6690, University of Arizona, College of Medicine; Nutrition, Scientific Illustration.

Robinson, Nancy, Church World Service, 475 Riverside Drive, Room 620, New York, New York 10027, 201-870-2074; Development, Social Service, Administration.

Roe, Nancy, 9460 N. Rancho Verde, Tucson, Arizona 85704, 602-889-6321, Superior Farming Company; Agriculture.

Roodkowsky, Mary, BIM, 56 Boylston Street, Cambridge, Massachusetts 02138, 617-491-6350, United Methodist Women; Agriculture, health and care.

Ruiz, Miryam, Carrera 9 #70-69 Seguceolo Piso, Bogota, Colombia, 459526, Universidad - Bogota Colombia.

Saad, Ratiba, 1230 N. Park #209, Tucson, Arizona 85719, 602-884-1631; Soil and Plant Science.

Sabbagh, Entisar, 6765 N. Catalina Avenue, Tucson, Arizona 85711, 602-299-2093, University of Arizona; Women in Changing Society.

Salamon, Sonya, University of Illinois, 1105 W. Nevada, Urbana, Illinois 61801, 217-333-3829; Anthropology.

Sales, Miranice G., 801 E. 10th St., Apt. 7, Tucson, Arizona 85719, 602-623-1731, University of Cears, Brazil; Nutrition and Biochemistry.

Sandoval, Pam, 1155 N. Miranda Apt. A-3, Las Cruces, New Mexico, 88001, 505-646-4735, NMSU-student; International Affairs.

Sarica, Saadet, Tezel Sok. #8-2, Y.Ayranci-Anakara-Turkey, 179466 Turkey, Agricultural Economics, Women and Education.

Schaler, Otto, AID-Office of International Training, U. S. State Dept., Washington, D. C., 20523, 202-235-1956; Training-Implications of Hunger.

Schick, Barbara A., 1020 Clara Street, Dubuque, Iowa 52001, 319-588-6364, Clarke College Dept. Food and Nutrition; Nutrition.

Scott, Gloria, 4301 Mass Avenue N.W., Washington, D.C. 20016, 202-477-6925, World Bank.

Seals, R. Grant, Associate Dean, College of Agriculture, University of Nevada, Reno, Nevada 89557; Food supply system; population and nutrition.

Seidman, Ann, 10 Appleton Rd., Cambridge, Massachusetts 02138, 617-693-7201, Clark University; Economic Development as it affects women.

Sharmila, Fernando, 185/2 Dharmatola Mawatha, Colombo 7, Sri Lanka.

Simmons, Mary K., 450 South Haskill, Willcox, Arizona 85643, 602-384-3594, University of Arizona; Nutrition and Economy.

Smith, Hadley E., AID/IIA/EA, Washington, D.C. 20523, 202-362-8382; Food grain resources in LDCS.

Snow, Phyllis R., 1466 East 8th North, Logan, Utah 84631, 801-752-4100 Ext. 7601, Utah State University; Nutrition, Foods, Home Management.

Soffel, Denise, P. O. Box 1753, Clark University, Worcester, Massachusetts 01610, 617-793-7468; Public Health, Nutrition.

Sookja, Ro, 1712 S.W. May Street, Corvallis, Oregon 97330, Oregon State University; Food and Nutrition.

Sousa, Maria de, Comissao da Condicao Feminina, Au-Elias Garcia, 12-1, Liboa 1 Portugal, 774632/770300 Lisbon; Nutrition.

Spangler, Patricia, 811 E. 1st St. #3, Tucson, Arizona 85719, 602-622-0606, University of Arizona, Department of Nutrition, College of Agriculture. Interest: communities and personal development.

Stavrakis, Olga, 863 23rd Ave., S.E., Minneapolis, Minnesota 55414, 612-331-6696, University of Minnesota; Program Development in Nutrition, Agriculture and Social Change.

Stewart, Bonnie Ann, 6110 E. 5th St. #219, Tucson, Arizona 85711, 602-884-1955, University of Arizona, Arid Lands Studies; Agricultural Economics.

Strow, Helen, American Home Economics Association, 2010 Massachusetts Ave. N.W., Washington, D.C. 20036; Rural Families.

Swan, Patricia B., University of Minnesota, Dept. Food Science and Nutrition, St. Paul, Minnesota 55108, 612-373-1194; Nutrition.

Thomas, Jim, International Programs Office, Utah State University UML 35, Logan, Utah 84322, 801-752-4100 Ext. 7471; International Development.

Thomsen, Amanda M., Tucson, Arizona, 602-327-4063.

Tinker, Irene, ACTION, 806 Connecticut Avenue, N.W., Washington, D.C. 20525

Turbitt, Coralie, 2000 P Street N.W. #403, Washington, D.C. 20036, International Center for Research on Women (ICRW); Rural Development.

Tuthill, Janet C., BERD, Virginia State College, Petersburg, Virginia 23803 (Representing SECID).

Twining, Olive, 2375 Twining Road, Ukiah, California 95482, 707-462-7930, Farm Centers International; Agriculture, Family Planning.

Vajrathon, Mallica, UNFPA, 485 Lexington, New York 10017, Room 2114, 212-754-8242, United Native Fund for Population Activities; Women, Population, Development.

Valadian, Margaret, Box W84, Hayes Street Neutral Bay, Sydney, Australia, 02-92-1772, Aboriginal Training and Cultural Foundation; Education.

Van Than, Cao, 2002 E. Ft. Lowell, #131, Tucson, Arizona 85719, 602-884-3225, University of Arizona; Agricultural Production.

Ventre, Valerie, 711 Villanora Drive, Davis, California 95616, 916-756-6750, University of California; Plant breeding and Human nutrition.

Villa-Roel, Myriam G. de, Carrera 50 #53-119, Bucaramauga, Columbia, 58689-77025, Univeridad Inductieal de Sautauder; Educacion.

Voll, Sandra Johnson, 4719 E. Baker, Tucson, Arizona 85711, 602-884-1368, University of Arizona; Education.

Walker, Jean C., 2000 E. Hampton, Tucson, Arizona 85711, 602-325-5021.

Warner, George C., New Delhi ID, Dept. of State, Washington, D.C. 20520, Agency for International Development; Food programs.

Weissman, Juliana, 6524 Lakeview Drive, Falls Church, Virginia 22041, 301-443-4550, DHEW-Office of International Health; Nutrition, marketing systems, child health.

Whiting, Martha A., CARE-Kenya, Box 43864, Nairobi, Kenya, 334300; Water Development.

Winters, Chris, 4909 E. 17th Street, Tucson, Arizona 85711, 602-790-5959, University of Arizona; Human Nutrition.

Weber, Fred R., 5797 Bogart, Boise, Idaho 83702, 208-344-1150, International Resources Development and Conservation Service; Nautral Resource Development.

Weymann, Barbara, 302 E. University Blvd., Tucson, Arizona 85705, 602-884-7810, YWCA of Tucson.

Williams, Dessima, 4201 Mass Avenue N.W., Apt. 4024-C, Washington, D.C. 20016, 202-244-5736, The American University; The Politics of Poverty.

Wilson, Esther H., 106 Morrill Hall, University of Idaho, Moscow, Idaho 83843, 208-885-6545; Food and Nutrition.

Winterfeldt, Esther, FNIA Dept. Division of Home Economics, Oklahoma State University, Stillwater, Oklahoma 74074; Food and Nutrition.

Wise, Yvonne Post, Center for International Programs, New Mexico State University, Las Cruces, New Mexico, 505-646-4735; Women Organizations.

Wood, James H., CID P.O. Box A, Logan, Utah 84322.

Wyse, Bonita W., Associate Professor, UMC 87, Nutrition and Food Sciences, Utah State University, Logan, Utah 84322, 801-752-4100; Nutrition and Dietetics.

Yamanouchi, Kuniko, 3601 E. 2nd St. Apt. 93, Tucson, Arizona 85716, 602-326-4176; Home Economics.

Yeaman, Donald, USAID, Department of State, Washington, D. C. 20523, c/o Embassy Pouch Damascus.