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EVALUATION REPORT

Meals for Millions

THAILAND

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## ABBREVIATIONS

- AID - Agency for International Development
- ANP - Applied Nutrition Program
- MFM - Meals for Millions/Freedom from Hunger Foundation
- MOPH - Ministry of Public Health
- MSH - Management Sciences for Health
- PACT - Participating Agencies Collaborating Together (a PVO)
- PVO - Private Voluntary Organization
- RTG - Royal Thai Government (the Central or Federal Government)

## FOREWORD

This report is one of a series of evaluation of PVO health and nutrition projects by Management Sciences for Health for the Bureau for Food for Peace and Voluntary Assistance of AID. It was written by James Becht, a public health evaluation and information specialist, and James M. Pines, a nutrition planning and evaluation specialist. Meals for Millions (MFM) was represented on the evaluation team by Richard Redder, Vice President for Program, and Kathleen Stack, Director of Planning and Evaluation. Both took an active role and contributed significantly to the formulation of conclusions and recommendations. Naiyana Khomson, Program Manager, and Chatri Prachahipat, Community Development Specialist, provided invaluable help. Consistent with the procedures established by MSH for the PVO evaluation methodology, field interviews occasionally required confidentiality, i.e. the absence of MFM personnel. A list of persons contacted and the itinerary of the evaluation are found in Appendices A and B respectively.

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## I. EXECUTIVE SUMMARY

From July 1982 through October 1984, the Meals for Millions/Freedom From Hunger Foundation (MFM) spent about \$335,000 to introduce and implement a five-year Applied Nutrition Program (ANP) in Thailand, expected to continue until July 1987. MFM and the ANP benefitted from a 1982 three-year matching grant from AID and annual grants for the Thailand Program from Participating Agencies Collaborating Together (PACT), though MFM private funding sources make the project independent of such grants. A formal agreement with the Royal Thai Government (RTG), signed with the Ministry of Public Health (MOPH) on November 1, 1982 projected a three year project cost of \$605,545, with \$459,809 coming from MFM and \$145,736 from the Ministry.

The ANP goal is to "improve the nutrition status in the rural population of Lampang Province," later narrowed to mean nutrition status of children under five and pregnant and lactating women in Sobprab and Ngao districts, two of the Province's poorest. The ANP purpose is to:

"organize and implement an Applied Nutrition Program to provide a system for transferring relevant nutrition information to the populations of Ngao and Sobprab Districts and to provide support to community development projects linked to solving existing nutrition problems."

Seven national staff professionals, all Thai, work closely with the provincial departments of Public Health, Education, Agriculture, and Community Development, making the Program a combined effort. MFM serves primarily as catalyst, trainer, motivator and coordinator, with most direct services provided by provincial government staff.

Major ANP components include:

- coordination of development activities with government and private agencies;
- clinical control and monitoring of children under five years old and pregnant and lactating women;
- health and nutrition education to mothers of malnourished children;
- training in the management of groups and projects;
- training and technical assistance in small-scale agriculture; and
- promotion and implementation of projects responding to community needs, including income and sanitation.

Quarterly anthropometric surveys by Government staff, with ANP help, suggest a trend toward reduced incidence and severity of infant malnutrition, probably owing to Governmental programs predating the Program. It is early to expect ANP impact on nutrition status, nor can current ANP activities explain observed trends. Increases in food and animal production; improved nutrition surveillance and referral and other intermediate ANP outcomes, make acceleration of downward trends likely.

The promising results already achieved appear to be related to the Thailand ANP's adaptation of the MFM project model. This includes the successful cultivation of high level support for nutrition as a high priority, sensitization and coordination of field staffs in different government departments, effective use of participatory techniques to expand community roles in decision-making, and increased family and group self-help, thereby integrating nutrition with other sectoral goals and activities. It is not yet clear that results can be sustained without presence of an outside PVO.

The ANP has introduced, or increased dramatically, improvements within the project area, including raising of ducks, fish, bees, and use of water filters and food cabinets. By limiting ANP contributions to initial stocks, mobilizing local resources, and encouraging revolving funds, ANP helps assure sustainability of these increments to real income.

The program suffers from poor initial causal analysis and targeting. Excessive reliance on averages, inadequate quantification of nutrient deficits, and failure to consider relative importance of determinants produced oversimplified generalizations about impact of production gains. The ANP hypothesis failed to link increased production directly with assurance of increased consumption in malnourished families.

Revision of data collection, more use of disaggregation, mapping, and nutrition profiles, if combined with improved analysis, can increase achievement of nutrition goals at reduced cost. More effective MFM provision and management of technical assistance will be required to improve ANP planning and performance.

An improved Thailand ANP can provide an outstanding and sustainable model, replicable where conditions similar to Lampang exist. Under different conditions the ANP process may be generally applicable, but with varying results.

## II. BACKGROUND

### A. Description of this Evaluation

The evaluation of the MFM ANP in Thailand was undertaken by Management Sciences for Health (MSH) in January, 1985. The methodology consisted of five phases:

#### First phase: Preparation - January 3-6

- Orientation and discussion with AID/W Project Manager.
- Visit to MFM home office in Davis, CA for planning and initial interviews and data collection.
- Initial review of available documents.

#### Second phase: In-country protocol - January 7-8

- Orientation and planning with country program director to finalize arrangements.
- Introduction meeting with appropriate MOPH officials.
- Initial meeting with program staff to (i) brief staff as to purpose and methodology of the evaluation, (ii) obtain a brief history and description of program and participating communities and agencies, and (iii) finalize selection and schedule of field visits and persons to be interviewed.

#### Third Phase: Data Collection - January 9-16

- Conduct interviews, visit field sites and review documentation.

#### Fourth Phase: Confirmation of Findings - January 17-18

- Detailed debriefing with program staff and MFM representative prior to departure.
- Summary debriefings with Ministry of Health and USAID Mission in Thailand officials.

### B. The Meals for Millions/Freedom from Hunger Foundation (MFM)

Meals for Millions/Freedom from Hunger Foundation (MFM) is a private, non-profit organization incorporated under California law in 1946. The Foundation operates under a charter and is administered by a Board of Trustees who serve without compensation.

MFM was founded in 1946 by Clifford Clinton who fed the hungry in his Los Angeles cafeteria for free. His search for a

nutritious, low-cost, food supplement led to development of a Multi-Purpose Food. Shiploads were sent to hungry people overseas as well as in the United States. By the late 1960's, MFM recognized that a relief feeding program was only a stopgap response to the problem of hunger and malnutrition, bringing about little lasting change.

In order to educate people in developing communities to solve their own food and nutrition problems, MFM gradually developed an integrated program of training and technical assistance in nutrition planning and community development called the Applied Nutrition Program (ANP).

The goals of the program are to:

- strengthen the capabilities of people in developing communities to solve their own food and nutrition problems;
- do so within the framework of the communities' existing economy and culture;
- give special emphasis to the nutritional needs of infants, children, and pregnant and lactating women;
- advance and perfect the 'participatory' or 'self-help' approach to achieve lasting development..

The ANP addresses the multiple social, economic, environmental and biological factors contributing to malnutrition. It is based on the applied nutrition approach promoted by the United Nations Food and Agricultural Organization (FAO), and detailed strategy set forth by Michael C. Latham, M.D. in his book, Planning and Evaluation of Applied Nutrition Programs. It encompasses multi-sectoral interventions which provide linkages among education, food production, income-generation, health services and improved nutrition.

The ANP process involves local communities and development agencies in collaborative efforts to identify problems and design and evaluate programs and activities which promote grassroots integrated rural development with a nutrition focus.

MFM implements the ANP with a small staff of respected local nationals who work closely with existing public and private organizations. Through the ANP process they build community and individual capabilities to identify and solve problems, both directly and by using other local extension services. MFM staff understand the realities of national food and nutrition policies, and maintain relations with policy-makers to enlist their support for integrating nutrition concerns into rural development programs. In this way they promote awareness of the ANP model so it may have broader impact on a national scale and a greater chance for adaptation in new areas.

The development and implementation of an ANP follows five stages:

- Stage 1: Doing a feasibility survey and preliminary planning.
- Stage 2: Defining objectives, collecting baseline data and doing more detailed planning.
- Stage 3: Initiating program operations.
- Stage 4: Evaluating and adjusting activities.
- Stage 5: Expanding the program to other communities.

In general, ANP activities include:

- Program planning and review sessions with inter-agency coordinating committees who collaborate in ANP implementation.
- Development and implementation of training sessions for community workers and rural beneficiaries in project planning and management, community development, health and nutrition, food and agriculture, water resource development, small business, cooperative formation, and others.
- Planning, monitoring and follow-up of community and individual project activities.
- Nutrition education and growth monitoring.
- Revolving loan funds, management and technical assistance to support income generating activities.

MFM is funded by private contributions, church and foundation donations, and grants from AID. MFM was the recipient of a Development Program Grant (DPG) in the three-year period ending November 1978. This was followed by an Institutional Development Grant for an additional three years. The Matching Grant, awarded to MFM by AID became effective in February 1982 and committed a total donation of \$1,850,000 for a three-year period. MFM's contribution to the grant program was \$3,305,000, or 55 percent of the total estimated expenditures. Other government contributions have provided \$625,000. The Matching Grant provides part of the funding for the Thailand Project.

### C. Program Environment in Thailand

#### 1. Socio-Economic Context

Thailand has made great strides in growth and development over the past two decades. The estimated per capita income in 1981 was \$770 and the incidence of poverty has been reduced substantially. Rural agriculture, the primary reason for this

reduction, accounts for 60 percent of all export earnings and is the primary occupation of 70-75 percent of all Thais.

Thailand's almost 50 million people live on a land area of 308,400 square miles. Thanks to an effective national family program, population growth is now a low 1.9 percent. An infant mortality rate of 50 per 1,000, adult literacy of 86 percent and daily per capita calorie supply over 100 percent of requirements place Thailand among the most advanced developing countries. Substantial pockets of poverty and malnutrition remain however, especially in less accessible rural areas.

## 2. Host Government Policies

The RTG places a strong emphasis on the improvement of nutrition. The National Village Level Food Processing Program has been expanded to cover 18,000 of 55,000 total villages, with a planned coverage of 25,000 for 1989. There is a National Nutrition Surveillance System covering 70-80 percent of the population and nutrition education is promoted throughout the primary health care system. In addition, the sixth five-year plan includes an increased focus on the problems of pregnant and lactating women. All of this provided a favorable context for the Project.

## 3. Relevant USAID Policies and Strategies

AID health strategy aims to promote greater participation of the private sector in health delivery and family planning, as well as increasing the capacity of existing institutions to provide efficient services through technical assistance and management training. USAID/Thailand's health programming includes a strong emphasis on planning, primary health care (including support for village level food processing) development of water resources, and malaria prevention. It supports programs of the Population Council, Family Health International, and Family Planning International Assistance.

### III. THE MFM PROJECT IN THAILAND

#### A. Background

The Project is in Lampang, a rice and lumber producing rural province about 300 miles north of Bangkok with a population of 650,000. For seven years (1974-1981) Lampang was the site of the RTG Health Development Project, financed by USAID, the model for Thailand's primary health care system.

Representatives of the Thailand Ministry of Health, including the Project Director of the Lampang Project, first requested MFM assistance in 1979. In 1981, after initial technical assistance resulted in fabrication of ten village texturizers to produce nutritious foods for child nutrition centers, the RTG asked MFM to establish an ANP in Lampang. A feasibility study was completed in 1981, including selection of Sobprab and Ngao, two of the Province's poorest districts, as the Project sites.

#### B. Program Goal, Purposes and Strategy

The goal of the MFM project in Thailand is "to improve the nutritional status in the rural population of Lampang Province, Thailand." Indicators by which to determine progress toward achievement of the goals are measures of health and nutrition status, and food consumption:

- 25 percent reduction in malnutrition among 0-5 year old children;
- improved quality of foods consumed by families; and
- reduced incidence of morbidity and mortality in 0-5 year old children.

The purpose of the ANP is "to organize and implement an Applied Nutrition Program to provide a system for transferring relevant nutrition information to the total population of Ngao and Sob Prab Districts and to provide technical and material support to community development projects linked to solving existing nutrition problems." Plans include the integration of nutrition education into existing primary health care services; inclusion of community development and parasite control components in the nutrition education project; and design and use of nutrition and health related printed materials.

The objectives are to establish an integrated nutrition program model using a participatory community approach; to develop and adapt a model suitable for replication nationwide; to work with national government and provincial health officers to raise awareness of the importance of nutrition to economic development;

and to organize and work with communities to develop and implement health and nutrition related projects.

The results or planned outputs of the project are:

- reduction of malnutrition by 25 percent over three years in the target group;
- monitoring of all (approximately 10,000) preschool children using 450 volunteers by the end of three years;
- 600 government level workers and village volunteers trained in nutrition, nutrition training techniques, and in the use of culturally relevant nutrition education materials;
- availability of culturally relevant nutrition education training materials and teaching aids;
- implementation of health and nutrition related community projects;
- strengthened participation of community groups in identification and solution of nutrition problems;
- establishment of a model program which can be replicated by the government;
- replication of the program in other districts;
- transfer of financial responsibility for the program to the government at the end of three years.

Planned inputs to accomplish the program were employment of six full time staff; equipment and supplies such as scales, drugs, seeds, audio-visual aids and materials; and technical assistance and training costs. A vehicle was purchased in the second year of the project. Direct expenditures by MFM for the first three years of the project were projected at \$459,809. The RTG was to provide 40 percent of personnel costs, materials transport and support costs, projected at \$145,736 for the first three years. Community inputs were expected in the form of time, labor, land and materials, in unspecified amounts.

### C. Activities and Resource Utilization

Many activities associated with the MFM catalyst and coordination roles do not lend themselves to quantification. The Program Manager, for example, performs these roles in most of her frequent contacts with government officials. The word "promotion" also fails to convey a sense of what the Community Development Specialist and his assistant do. Table 1, a chronological list of Project activities, should be viewed as no more than a guide to what has happened so far. Interviews with all staff left

little doubt of their commitment, competence, and energy. The Project activities also include work of field staff from the four participating provincial government departments of Health, agriculture, education, and community development.

Table 2 summarizes financial inputs and Table 3 lists contributions from local individuals, organizations and institutions. An attempt to quantify value of contributions was not fruitful, because the significant savings from local technical help proved difficult to express in financial terms. Review of the table indicates the range of contributors and scope of their donations. These afford some optimism about the possibility of a national MFM affiliate, as in Korea, raising the money to continue many Project services.

#### IV. RESULTS TO DATE

Tables 11 through 18 exhibit a declining trend in malnutrition throughout Lampang Province that predates the ANP. Favorable economic conditions, impact of the Lampang Health Development Project, and the effects of other RTG programs are likely causes of the decline. Though it is too early to expect nutrition impact from MFM activities, current achievement of intermediate outcomes can accelerate the trend now identified, if benefits are targeted more clearly to those most at risk.

As tables six and seven show, the training component has reached a variety of groups, though rarely for more than three days at a time. In addition to some modest skill development and reinforcement, these efforts have sensitized political officials, government workers, and villagers to the importance of malnutrition and the need for addressing it. This mass sensitization, though difficult to quantify, has produced a substantial increase in consideration of the problem. The politicians talk about nutrition, village leaders and many followers know about it, and "non-nutrition" government departments are looking at ways to make their activities more effective nutritionally. The departments meet together and, while they do not yet plan together for achievement of district, sub-district, and village nutritional self-sufficiency, they probably would with MFM guidance. Multisectoral coordination in the Project districts provides a model that MFM has already been asked to demonstrate in Korat Province.

Tables eight and nine show the results of community development activities. Though it is difficult to estimate how much will continue when MFM's dynamic Community Development Specialist moves on, his catalyst role has generated impressive accomplishment. Village committees formerly dormant now function and individual villagers have responded well to opportunities for initiating income-generation and sanitation activities. Linkage of these outcomes to specific nutrition improvements remains tenuous and many recommendations of this report address the problem of assuring that the nutritionally vulnerable benefit adequately from the community development work.

#### Training Outputs

Training is one of the two major components of the Thailand ANP. The staff have designed and conducted training activities on two levels: (1) sensitization of government workers to nutrition problems and promotion of intersectoral coordination in addressing the causes of those problems (Table 7); and (2) providing nutrition education directly to various village-level groups (Table 6). Government field workers comprise health workers and midwives who staff sub-district health centers; rural elementary school teachers; agriculture, livestock, fishery and home economist extensionists; and community development workers.

Formal training has been provided to approximately 115 of these workers on an annual basis during two to four day sessions. The content of this training included: orientation to the Thailand ANP; basic nutrition; integration of community development and nutrition education activities; nutrition surveillance and dietary survey techniques. Most training of these workers, however, has taken place during monthly coordination meetings in the respective districts, and subsequent activity-oriented visits to the villages. One-day training was also given annually to a program Task Force comprised of the District Chiefs and representatives of the four principal government agencies: health, education, agriculture, and interior. The focus of this training and subsequent periodic meetings has been to strengthen and promote intersectoral coordination. On the average, about 20 people have been involved.

Table six details the training provided to village target groups. To date, this training has been organized and conducted by the ANP staff and outside "experts," with the assistance of the area health workers. It is planned that as experience and competency are gained, the health workers, teachers, and home economists will assume responsibility at this level.

Since June 1983, an average of ten three-hour sessions per month have been given to various groups of approximately 15 village health volunteers and health communicators; eight four-hour sessions per month have been given to women's groups of about 35 participants each; two three-hour sessions each month for groups of 16 participants at the various community nutrition centers; and two four-hour classes per month have been given to large groups (over 100 participants) of primary school children. The content of the nutrition education has concentrated on basic nutrition problems, deficiencies and practices; food sanitation and preservation; supplementary feeding and occasionally backyard gardens and personal hygiene. The use of teaching aids and anthropometric measurement techniques has been covered with the village health volunteers. This has been supplemented through direct supervision of the village health volunteers and cooking demonstrations to the womens groups by the ANP Junior Nutritionists.

## V. ANALYSIS OF RESULTS

### A. Impact on Malnutrition

Between March 1982 and November 1984 the prevalence of second and third degree malnutrition in children under five years of age has decreased in the ANP target districts (Ngao and Sobprab) by almost 60 percent. Since March 1983 alone, severe malnutrition has decreased by 50 percent (Table 14). The indicators of program success stated by MFM in its proposal to PACT include a 25 percent reduction in child (0-4) malnutrition.

MFM agrees that little program impact on nutrition status is likely after only two years. The scope and timing of Project activities also make attribution hard to support. These observations raise questions about the cause(s) of the observed drop in malnutrition, the basis and meaning of MFM's proposed goal of 25 percent reduction in view of the declining baseline, and the need for specificity in the causes and levels of malnutrition as well as in defining sub-age groups at risk.

A significant trend of decreasing malnutrition is present throughout Lampang Province (Figure 17; Table 18). It appears that this trend is associated with general improvement in social and economic conditions. Also, there has been a considerable extension in all-weather roads, thereby increasing the accessibility of a large portion of the rural population to markets and health services. Lampang Province was also the site of the large AID-financed Health Development Project (\$7 million, 1974-1981), which, while not including a specific nutrition component, did establish an extensive infrastructure of health services and trained a large cadre of rural health workers and village health volunteers.

The observed downward trend might also be explained in part by the nutrition surveillance system itself. The system was initiated nationwide in 1982 as a priority of the Division of Nutrition (MOPH). Lack of experience with the hanging balance beam scale and recording procedure, and low coverage in some of the non-project districts during the early phase of the program make this data suspect, but most error in measuring would be relatively consistent throughout the districts. In the target districts, direct supervision and retraining by the ANP nutritionists and 95 percent coverage of the pre-school children have enhanced reliability of the data. Overall, the presence of a continuous system throughout the Province for weighing children at the village level, and the recording of data on attractive individual and community charts which remain with the mothers, may serve as a stimulus in itself to raising awareness and improving eating and feeding practices.

The ANP staff monitor and motivate the surveillance system. They also retrieve quarterly tabulations by sub-district but do little analysis of the results, other than comparing district

totals from one period to the next. As evidenced by Figure 13 and related tables, the patterns of malnutrition vary significantly among sub-districts. Even greater variance can be expected from village to village. In fact, third degree malnutrition has been eliminated in nine of the 14 sub-districts and fewer than 250 cases of second and third degree malnutrition are reported to exist in the two target districts.

Clearly, there is a need to disaggregate the data by villages as well as sub-districts and to identify with greater precision those family characteristics and other factors most associated with malnutrition. This will aid the targeting and evaluating of program interventions. MFM should be concentrating on preventing cases of first degree malnutrition from becoming more severe and reaching high-risk children before they become malnourished.

The ANP also proposed to reduce malnutrition in pregnant women and lactating mothers, yet no indicators were established nor data collected to verify any progress. Inspection of hospital records in the target districts showed that the presence of higher levels of malnutrition in children under one year of age in one district (2.7 percent in Ngao as compared with 0.8 percent in Sobprab) was strongly associated with the incidence of low birth weights in 1984 (21 percent in Ngao; 6 percent in Sobprab). Again, more analysis of the specific causes of malnutrition and focusing of interventions appear to be in order.

Another indicator of program success was stated to be reduction in under-five morbidity and mortality. No activities of the ANP specifically address this issue, except for the promotion of sand water filters, nor are health and hospital statistics monitored to detect changes. Diarrhea, however, accounts for almost half of out-patient morbidity in the target districts (Table 19). Because of the direct effects of diarrhea on nutritional status, specific attention to this problem is warranted (see recommendation no. 11 on page 29.)

#### B. Impact on MFM

The Matching Grant and PACT assistance contemplate institutional improvement of MFM along with ANP outcomes. Positive changes in MFM should increase future impact on beneficiaries. The Thailand ANP results suggest that AID and PACT help are contributing substantially to MFM development.

Staff growth reflects this assistance most clearly. The Thailand ANP Program Manager and Community Development Specialist, both very capable but lacking nutrition-related experience, already exhibit good understanding of the ANP approach and techniques. With more help from MFM on technical matters, both should soon be able to continue the Project unassisted and perhaps give technical assistance to MFM activities in other countries. Though less dramatic, impact of staff training on junior workers also appears significant.

Support of ANPs has made MFM a leader in the PVO nutrition world. Filling this new role demands considerable improvement in understanding and practical application of technical matters, as emphasized throughout this report; the two grants have set the stage for that improvement.

### C. Linking Production and Consumption

MFM has not paid adequate attention to the link between increased nutrient output and nutritionally favorable consumption. Closer analysis suggests that more systematic attempts to encourage channelling of incremental production to those most at risk carries a benefit-cost ratio so favorable that it makes current overemphasis on production gains very difficult to defend. Though initial choices reflected ease and acceptability of new interventions, better consideration of nutrition impact would have improved activities.

The contribution of fishponds to improved nutrition, for example, illustrates this point. A typical pond yields an annual harvest of 100 kilos in round numbers. One kilo of fish provides 1060 calories and 188 grams of protein. This increases total nutrient availability by 106,000 calories and 18,800 grams of protein per year, or 290 calories and 51.5 grams of protein per day, temporarily omitting any nutrient cost of raising fish and any nutrient loss through displacement of other cultivation, such as paddy, by ponds. Two hundred ponds, a very favorable estimate of the eventual permanent number in the Project area, augment total calorie availability by 58,000 calories and 10,300 grams of protein per day, again omitting losses. If all the fish is consumed and other consumption remains constant, an unlikely occurrence, this gives an average daily per capita increment of less than one calorie and one gram of protein for the 66,000 people in the two districts. Additional intake rises to about five calories but is still less than one gram of protein, if all the fish is eaten by the 12,000 children under five. If channelled to those most at risk, say 6,000, these figures double.

Assuring nutritionally favorable dispositions of the harvest is as critical to improving nutrition as increasing physical availability. The contribution of fish ponds to improved nutrition, small at best, clearly depends on several other variables besides production. Unless these are addressed, impact will be minimal.

The decision to emphasize duck-raising and egg production illustrates both strengths and weaknesses of the present ANP approach. Discovering that people in the Project area do not serve duck to guests and prefer chicken themselves, but had no taboo against feeding the eggs to children, staff encouraged duck production. MFM made the final decision, but only after exemplary involvement of target communities and sympathetic explanation of reasons for the choice. This was followed by an

impressively linked and mutually reinforcing effort by the four participating government departments (production results shown in Table 10). Although it is too early to predict permanence of current levels, initial outcomes are impressive.

MFM's eighth quarterly report presents survey results showing 325 eggs gathered by 170 families on a random day. Only 15.5 percent of them were consumed by children under five. Field staff claim the actual figure is higher, but many eggs were probably consumed by older and better nourished people because duck-raising families include the more prosperous. If we assume that the 170 families had 250 preschool children, and we allow for nutritional losses from duck feed consumed and substitution of the eggs for foods which would have been eaten previously, the new egg consumption added an average of about 50 calories and 3+ grams of protein for each child under five, including those already well nourished. More direct channelling to preschoolers, especially those most at risk, could more than double the incremental nutrient intake.

MFM analysis, however, stopped too soon. Staff assumed existence of favorable and cost-effective nutrition consequences without exploring adequately the conditions essential for assuring them. As a result, the impact of egg production on consumption by those most at risk remains unknown, but demonstrably less than it could be with better analysis and response. Increases in production do not automatically bring about increased total consumption by those whose nutrition status needs improvement. When net intake does increase, nutritional impact varies with nature and magnitude of deficits, incremental intake, and nutrient absorption. Acknowledging and responding to these factors is not highly technical and failure to do so often makes nutrition improvement dubious and more costly.

These examples are not intended to deprecate the very impressive production outcomes achieved by ANP, but to illustrate the analysis required for assessing nutrition impact and the cost-effectiveness of alternatives for achieving it. The MFM survey of end-use of duck eggs shows an awareness of the importance of looking at the links between production and consumption that is rare among PVOs or anyone else working to augment food production. Unfortunately, analysis of the survey results, and hence Project response, failed to discover the missed opportunity for improving outcomes by more systematic attention to directing incremental output to those most at risk.

The Project staffer concerned most directly understands the point intuitively. He correctly emphasizes that contributions within extended families and reduced market prices from increased local availability, or concessionary prices given by producers to poor people, all help to channel output more effectively. Various feeding and food distribution operations, including the RTG's village level food processing project initiated in some villages, also help. Nevertheless, the Project has so far failed to quantify

calorie and nutrient deficits, omitted identification of consumption goals for increased food production, and made little effort to link production and consumption systematically to achieve those goals. When this is done, the need to view production interventions as part of small-farm management will become apparent.

Staff acknowledge that feed costs prevent the poorest twenty percent in the villages from raising ducks and increasing their supply of eggs. This means that these families, where malnutrition is undoubtedly highest, cannot greatly improve nutrition from this intervention unless getting food to them receives special attention. Viewing the duck and similar interventions in this nutrition system context emphasizes the limits of production activity alone for improving nutrition and forces attention to development of alternatives for increasing intakes of the most vulnerable families. For example, a revolving fund that allows the poorest to share in the duck-raising activity, though perhaps not cost-effective when explored closely, illustrates the search for alternatives and the value of analysis for improving program.

The Project would also benefit from better targeting to families most at risk. Although the MFM approach correctly emphasizes the importance of initial broad community involvement and participation by leaders, it is not clear how soon, and by how much, focus of activities can shift toward those most likely to become malnourished. Where participation by the poor is especially difficult, from lack of land and water for example, Project activities can too easily skew further the distribution of income. Even with the improved direction of incremental nutrient production to the needy, as recommended in this report, MFM needs to consider more carefully likely income distribution consequences. Village committees do not automatically share the wealth among all. They may decide, on their own, to give some food to the poorest, but that can easily stop at tokenism, unless MFM conditions material support on suitable collective concern for more equitable growth. Better project analysis of the at-risk factors associated with deterioration of nutrition status would clarify the problem and suggest solutions. Table 10 shows that there is little correlation between low nutrition status and production activities, confirming absence of geographical targeting.

This report does not criticize MFM for failure to have answers. It does fault the PVO for failure to know what the questions might be. MFM can take justifiable pride in the many achievements of the Project. It is only because of them that the report emphasizes the need to improve technical analysis and content. MFM need not become a research organization (there is little danger of that). Yet some practical technical work can make fundamental differences in increasing impact and in making MFM professionally credible throughout the world.

#### D. Management

The Project presents no serious internal management problems, partly because the Program Manager exhibits outstanding business skills. Except for early difficulty with the first senior nutritionist hired, staff competence and permanence are good (Tables 3 and 4). The new senior nutritionist works only half time but is needed full time. As a result, MFM is pressing the MOPH, his other employer, to release him fully for the Project. Staff work hard and some are spread too thinly over activities of varied importance. More careful tailoring of work programs would improve effectiveness and reduce likelihood of burn-out.

The Program Manager has related well with her counterpart, the Provincial Chief Medical Officer, whose relative passivity has given her primary control of the Project. A new and more active successor has already indicated desire to assume more direction and control. The Program Manager seems sympathetic to this step toward institutionalization, but there are likely to be some initial problems in familiarizing both MFM and Government department staffs with the new authority pattern. With MFM lodged in the Provincial Health Office and having two of seven staff people seconded from Government departments, the Project is integrated closely with Government operations.

MFM's Regional Director for Asia participated more actively in Project design and operation than have other MFM Regional Directors. The planning and design process includes a heavy headquarters input and, though field staff participate, they treat activity targets too rigidly. They fail to do the kind of ongoing technical analysis and evaluation possible when activities are viewed primarily in relation to results. Financial and activity reporting is excellent, though perhaps too thorough. Monthly activity reports submitted to headquarters serve little purpose, since supervision involves field visits every two or three months. A report limited to problems would reduce workload without impairing effectiveness.

The Project supports and reinforces the Government's nutrition surveillance system. It also maintains an independent system for recording results of community development activities, using more than 1000 volunteer health communicators as data collectors. This impressive accomplishment should pave the way for development of a results-oriented evaluation system. Presently, however, the Project has no plan for evaluation and analysis. Yet with excellent activity reporting, strong possibilities exist for useful correlation of activities and results to identify the most effective interventions. Further development of the evaluation system should receive immediate attention.

Technical support of the ANP by MFM headquarters has been inadequate. Field staff are not given enough help in identifying gaps in their knowledge, communication of needs to MFM headquarters resource people is poor, and the little help given has too often been insufficient. This deficiency is manifested particularly in a) interpretation and analysis of data, b) costing and

comparison of intervention alternatives, and c) quantification and linking of production and consumption goals and activities.

#### E. Information Systems

MFM shows outstanding sensitivity to the importance of baseline data and built-in evaluation systems. Scope and volume of Thailand efforts compare favorably with those of most PVO projects. The following comments seek to increase value of this work by suggesting modifications in selection of variables and methods of analysis. By collecting a different mix of data, improving presentation, and sharpening analysis without investing more time and money, MFM can turn the promising initial systems into a model that will serve it and other nutrition agencies well. Improved use of information, by clarifying the relation of socioeconomic variables to project outcomes, will also reduce the difficulties of replication. Collecting less and analyzing more will improve performance.

MFM baseline and other data needs more quantification, disaggregation, and epidemiological analysis. This involves no added highly technical work; villagers have been trained to do it elsewhere. But it does require better use of technical assistance for identifying and performing some simple analytical tasks. For example, discussing malnutrition for "0-5" children masks major geographical and age differences in etiology, nature, and severity. Monitoring birth weights will improve identification of high-risk pregnancies and assist causal analysis. Quantifying nutrient deficits will provide essential guidance for the mix and magnitude of activities. Better identification and quantification of causal relationships can aid targeting, programming of activities, and design of behavioral change interventions. Disaggregation would clarify identification of distinctive characteristics of the hill tribes, for example. A visit among them showed clearly that they differ from others in the Project area.

Linking nutrition status to family characteristics, feasible with available data, would help MFM identify at-risk families, analyze outcomes, and support attribution of results to ANP activities. The data show that about 25 percent of families complain of severe incidence of diarrhea and Ngao District Health Center data show diarrhea to be by far the most important health problem treated. Relating the incidence of diarrhea to the map of malnutrition and profiles of malnourished families will aid determination of areas where interventions related to diarrhea are a requisite for improving nutrition.

Though MFM correctly identifies importance of the generally high 70 percent of family income spent on food, relating frequency distribution of income with the cost of adequate diet would allow identification of income gaps and better comparison of alternative interventions. Seasonal variation also needs attention.

The project evaluation system would benefit from more careful exploration of factors likely to explain any nutrition improvement. MFM cannot now identify absolute or relative contributions of individual activities to favorable outcomes. Increased production is cited as being responsible for better infant nutrition, for example, without demonstration of increased net nutrient output, improved intra-family distribution, or other intermediate changes needed to produce it. Substitution effects in assessing consumption consequences of increased real income receive little attention. MFM needs to clarify assumed patterns of causal connection and measure changes in indicators related to the intermediate outcomes requisite for achieving nutrition impact. Without this, it may know that good things have happened, but be unable to explain how and why.

#### F. Training

ANP training of government health and other workers has sensitized them to the causes and effects of malnutrition, particularly in pre-school children, pregnant women and lactating mothers, and to the relationship of this subject to their routine programs and activities. Field visits and interviews confirmed that government field workers could indeed verbalize basic nutrition problems and concepts, a capacity attributed to the ANP training, and that they coordinated their activities in practice with those of the ANP at the village level. Officials at the District and Province levels also understood basic nutrition problems and concepts and were giving their support to inter-sectoral coordination.

The overall impression is that the training to date has reached a large number of people; the content is in a broad sense appropriate, and it has been reinforced through repetition and supervision. It remains difficult, and perhaps too early, to measure the real impact of these activities. On the one hand, expected outcomes have not been expressed in terms of specific behavioral change objectives. Nor has the training been targeted (at least in part) to those population groups which are particularly vulnerable, at risk, or afflicted. To its credit, ANP staff views itself as a "trainer of trainers" and a catalyst in establishing an ongoing system. On the other hand, this training is constantly jeopardized by a high turnover rate of district and sub-district government personnel. Thus, staff training must be considered an ongoing activity (i.e. continuing education). Government departments should be able to take it over when the Project ends.

Finally, the initial proposal contemplated the design and production of a variety of training support materials. Wisely, the ANP has not produced its own set of manuals but has promoted the MOPH Division of Nutrition set of training manuals and is currently awaiting completion of a nutrition manual for school teachers being developed at Mahidol University. The ANP staff have produced a few teaching aids to complement the standardized materials.

ANP training supplements supervision, making assessment of separate impact almost impossible and not worth the effort. The combined supervision-and-training activity, though difficult to describe precisely, reflects the essence of MFM's contribution to strengthening and coordinating Government service systems. By reinforcing existing skills, transmitting a few new ones, and sensitizing broadly and constantly, the Project provides an impetus to nutrition activity that seems likely to endure. By showing the Province how the systems can work, MFM offers a standard of excellence that has already achieved visible impact on performance.

#### G. Costs and Benefits

It is too early in the Project to calculate benefit-cost ratios, since total impact cannot be assessed. Nevertheless, early consideration here can ease eventual derivation of useful relationships. Cost-effectiveness, the efficiency of delivering activities and intermediate outcomes presents fewer problems. MFM's records already allow many determinations. Both the benefit-cost and cost-effectiveness of the project will be favorable compared to alternatives because the Project's training prepares trainers, its activities emphasize catalyst and coordination roles, and local and governmental resources contribute substantially. The total governmental and real economic costs of delivering services and results may be less favorable, but they are apparently not inefficient. MFM monitors spending closely, and absence of food costs, special staff honoraria and stipends to training participants, for example, also suggest that ANP costs are lower than most for comparable activities, as does the high level of donated technical assistance and other contributions. The Project's seven national staff cost less than what is normally required for one expatriate.

MFM, providing no special stipends to government staff or trainees, and few material inputs, followed the \$7,000,000 Lamphang Health Development Project, which was more generous. Benefit-cost advantages of the more modest approach appear substantial.

Any discussion of costs, activities, and benefits must decide first whose costs are being identified and which benefits are to be considered. The Matching Grant mechanism, for example, assures that AID costs will generate a volume of activities greater than the agency could provide directly with equal investment. The Thai Government, viewing the modest recurring costs associated with maintaining ANP activities, may also find the model appealing. Only the economic planner, concerned with allocation of scarce resources among competing goals and activities, seems likely to have reservations, especially when benefits emphasize nutrition gains exclusively.

Valuation of all Project benefits (e.g. increased output and real incomes, community improvement, skill acquisition) and apportionment of costs among them, can dramatically improve the benefit-

cost ratio of nutrition improvement. The Project primarily involves revision, not expansion, of existing activities, making only marginal costs relevant. These are generally modest. Only if all ANP costs are linked to nutritional gains does the likely ratio become exorbitant, but this offends common sense and sound economics.

Policy recommendations depend on the priorities given to alternative goals, not just on favorable ratios, especially where conversion to comparable money values involves hidden assumptions and value judgments. The MFM emphasis on widespread non-nutritional impacts raises important analytical problems about optimum activity combinations, but detracts little from the ANP model's appeal as an affordable and sustainable method of improving nutrition.

#### H. Sustainability and Replicability

The MFM approach improves likelihood of independent project continuation and lends itself well to replication. The "partnership" with communities and with national and provincial governments, in which the PVO leads but does not dominate; the training of trainers; and the limiting of contributions to amounts that can easily be replaced by Thai groups; all of these approaches favor both maintenance and extension of current activities. Major issues relate to the indispensability of a PVO or other presence and the infrastructural requisites for replication.

The ANP gives Thailand another option to consider for improving the national nutrition strategy and related programs. Elements of that strategy include Child Nutrition Centers, the Production for Consumption Program, and the Village Level Home Processing Project. Where these activities exist within the Project area, ANP activities have reinforced them by improving community participation and linking them more effectively with other nutrition-related activities. Even if ANP disappears as an identifiable project, much of it may be institutionalized as part of continuing government efforts to address malnutrition.

The catalyst role, key to the impressive coordinated effort under way in Lampang, may be more difficult for a national PVO or government agency to replicate. It will, however, probably become essential long after formal project termination in 1987, given past performance and the territorial imperatives of government departments. MFM understands the importance of replacing itself, but any discussions of sustainability must acknowledge the risks involved. Strong reinforcement of the now institutionalized concern for nutrition, and continued appreciation of the obvious benefits being achieved through coordination, should contribute to reducing those risks. But some coordinating entity with high-level support will probably be required.

Extending Project activities to other areas, with similar results, depends on existence of socioeconomic conditions and

government services similar to those of Lampang. This should be distinguished from the question of general applicability of the process, though content and outcomes will differ according to the infrastructure and other conditions in new areas. For example, much MFM motivation, sensitization, and training of villagers can be duplicated successfully almost anywhere, except among those most demoralized and least "ready" for self-assisted development. The full project model, however, requires presence of service systems that can be energized and coordinated. This means that outcomes will vary with the initial quantity and quality of services. MFM's healthy emphasis on adapting the approach to each cultural context favors successful replication, but it would be folly to assume that like results will always follow. Comparisons between countries or with projects of others should be avoided and, if attempted, must distinguish clearly the differences and influence of project environments. Though Thailand has less malnutrition than many other countries, the high yield from a modest investment helps justify inclusion in the ANP.

Considering replication also forces attention to costs. If viewed primarily as a vehicle for improving nutrition, the annual \$200,000 total cost to MFM and the Government gives \$20 per capita cost for serving the approximately 10,000 members of the under five and female target groups. This increases to \$100 or more for each person improving, depending on assumptions; a sum few governments are likely to invest to address malnutrition problems alone.

The MFM model becomes more appealing when viewed as a nutritionally oriented, community development program with diverse benefits. It then becomes politically and economically affordable. Staff costs are spread among various benefits, reducing those directly associated with achieving nutrition goals or, expressed differently, non-nutrition benefits diminish the net cost of improving nutrition when all costs are allocated to that benefit. Increases in real income, for example, may turn nutrition improvement into a "free good," a byproduct of other activities.

Even with current reducible costs, the ANP model in Thailand illustrates the linking of rural development and nutritional improvement in a self-sustaining, affordable, replicable way.

#### I. Environment

Impact of the Thailand ANP depends very much on the country's favorable project environment. Although the MFM process and related activities offer promise for all but the least favorable contexts the Thailand situation was "made to order" for achieving significant results with modest investment.

The Lampang Health Development Project helped build a primary health care system comparable with any in the developing world. The Government's concern for nutrition, manifested in national five-year plans and through specific program activities, made

senior Lampang officials more amenable to the MFM approach than in most countries. Thai frustration with the difficulties of achieving multisectoral coordination, acknowledged by the MOPH, encouraged acceptance of MFM as a catalyst for it. Improving economic conditions and political stability in Lampang Province have added to the favorable project environment.

MFM adapted the ANP approach to take advantage of the available infrastructure, thus increasing the output of the investment. Integrating operations closely with Government services increased likelihood of continuation and expansion after the Project ends. Such integration is far more difficult in countries with fewer and less effective services, requiring a different MFM adaptation. Nevertheless, the same emphases on high level support, multi-sectoral coordination, and community participation remain applicable.

#### J. Financial Constraints

Although Thai Government officials and field staff attribute problems primarily to financial limitations, the MFM approach indicates that increased nutrition impact can be attained with very modest investment. The Project's \$50,000 annual expenditure in the Province is negligible compared with the millions spent in the Lampang Health Development Project. The ANP "bought" coordination initially, but with credibility now well established continuation seems less dependent on financial contributions. As fish fingerlings were obtained through private donation, so can additional necessary resources be obtained without further expenditure by MFM or Government.

The chemistry through which MFM staff have become the nutrition "conscience," provider of a mystique, and reinforcer of lagging service systems remains difficult to analyze, but has more to do with personal styles, capacities and relationships than with the attractions of outside funding. Here "less is more," because more lavish funding might well have reduced Project effectiveness.

## VI. CONCLUSIONS AND RECOMMENDATIONS

### A. Conclusions

1. The Thailand ANP contributes to an effective Government multi-sectoral attack on malnutrition in target areas by:
  - Making Government services systems work better by catalyzing, motivating, supervising and coordinating participating departments and their staffs. MFM provides an example and mystique that energizes the civil servants and has brought concern about nutrition to a critical mass that produced action;
  - Continuing widespread and consistent training and supervision, emphasizing content and methods of nutrition education, practice of participatory techniques, and technology of food production and raising of small animals;
  - Introducing new crops, production methods, and organizational models for family and community activities;
  - Providing initial seeds, small animals, and materials together with developing revolving fund arrangements for continued expansion at no further cost to Government or MFM.
2. Major factors contributing to Project effectiveness include:
  - Absence of expatriate field direction and the hiring of motivated, competent field and headquarters national staff;
  - Willingness to subordinate PVO identity to Thai government interests and to the desires of beneficiaries;
  - Integration with existing governmental and village institutions;
  - Use of affordable, appropriate, and sustainable record systems, equipment, and organizational modes;
  - Active involvement of MFM's Regional Director for Asia.
3. MFM is required to provide supplementary manpower to carry out stated Government policies. Community development agents and home economists, in particular, are in short supply, and it is highly unlikely that the MOPH will be able to provide nutritionists at the district level in the foreseeable future. This will influence replicability of results, but need not affect nutrition focus and coordination.

4. Coordination, support, and cooperation among government agencies are very apparent at the Provincial and particularly district levels; field activities focusing on specific villages and families are often carried out jointly. It remains to be seen whether this coordination and mutual support will continue in the absence of the catalytic and promotional input of MFM staff.
5. It is too early to measure nutrition impact, but progress in food production and other intermediate outcomes, attributable to combined MFM and Government activities, favors prospects for eventual outstanding nutritional gains, though at higher cost than may be necessary.
6. Application of the MFM ANP process has been effective in generating response among government agencies and enthusiastic participation of villagers, but substantive aspects of project hypothesis content suffer from poor planning, due to:
  - Inadequate presentation and analysis of initial data, failure to cost and compare alternatives, and lack of quantification of nutrient and food production deficits;
  - Insufficient linking of production gains with consumption by malnourished and at risk families.
7. The Project will achieve ultimate nutritional improvement through integrated nutrition-oriented rural development. This involves activities that produce substantial non-nutrition impacts. The appropriate balance between these two outcomes has not been planned or determined and MFM has not yet clarified the level of general development activities and results essential to effective attainment of nutrition goals. More focus and impact on nutrition can be planned, without reducing community development outcomes.
8. The ANP increased nutrition concerns in district government offices and among provincial departments of health, agriculture, community development, and education. This generated various improvements in focus on malnourished groups by them, new nutrition-related activities, and more coordinated linking of sectoral efforts than existed previously.
9. The ANP makes no special efforts to attract women participants, though many are involved, because of the nutrition emphasis. Most village health volunteers are men and this reduces possible involvement of women. The Project is currently encouraging naming more women to village committees. The heavy workload of women and the relatively cooperative attitudes of men and women in Thai families support the ANP's effort to reach both sexes.

10. The Project's influence on Governmental and village concern for reducing malnutrition, emphasis on village participation in decisions, and stimulation of improved coordination of nutrition-related activities, appear to have had greater impact than training. However, three-day courses reinforce earlier training efforts and transmit skills such as data collection, duck raising, and use of participatory techniques. They also prepare Government trainers for post-project maintenance of skills. Though important, these efforts are less impressive than the widespread increase in priority of nutrition concerns, improved coordination, and related activities.
11. ANP staff do an outstanding job and the quality of their performance explains much Project effectiveness. Extension of the ANP to other areas, with similar success, requires recruitment of equally competent and committed people. The ANP model assumes presence of high-caliber staff at all levels. One of MFM's most important skills has been the capacity to find, recruit, train, and keep them.
12. Despite obvious dedication, some MFM staff offer reasonable complaints about being overextended and spread too thinly. They have difficulty identifying priorities and this affects quality of service. The pace will also precipitate early burnout.
13. Staff turnover in Government departments dilutes heavily the impact of ANP training and jeopardizes post-Project sustainability of the nutrition priority and related activities.
14. Many Government field staff perceive the Project as adding excessive work to their heavy daily routines, rather than as a new approach that integrates nutrition into regular activities without added burden. MFM emphasis on this response has not yet been sufficiently persuasive.
15. Current data suggest that second and third degree malnutrition in some target areas began declining before inception of the ANP, and has continued to do so, apparently as a result of earlier improvements in performance of the health care system and operation of other Government programs. Further improvement of the nutrition surveillance and referral system, combined with impact of other ANP activities, should virtually eliminate severe malnutrition in the two target districts by 1987. MFM goals are imprecise, failing to distinguish among degrees of malnutrition and among ages of target beneficiaries.
16. ANP ranking of villages by degree of participation and response, accompanied by intensified efforts among the less responsive, reflects good ongoing evaluation, feedback, and mid-project adjustment.

17. Though some Government staff assert that giving the ANP funds directly to provincial departments would have achieved comparable results, this appears inaccurate. The PVO provides more opportunities for staff to innovate than in the hierarchical Thai Government system, an outside presence that stimulates villagers and government staff to greater effort, and a nutrition "conscience" and coordination mechanism that had not existed previously.
18. MFM headquarters does not provide adequate back-up support to field staff, particularly in data analysis.
19. The process by which community participation is achieved is not articulated well enough to assure standardization in training, monitoring, evaluation and adjustment. Certain steps and participants are identified and strategies have been defined, but specification of procedures, techniques and methods is lacking.
20. Collection and utilization of data is designed to benefit primarily managerial interests, not those of villagers. Only the baseline survey was shared and partially analyzed at village level.
21. Need for and interest in program evaluation were expressed in initial documents, but specific plans and procedures were not defined. Data collection and processing responds to monitoring and programming targets, not to evaluation requirements.
22. The ANP can be sustained after MFM leaves the province or shifts to other districts, because a) recurrent costs of continuing the activities fall well within technical and financial capacity of Government and communities, b) continued high-level support is reasonably probable since nutrition concern has been, or will be, well institutionalized. Maintenance of morale and coordination without an expatriate PVO presents substantial risks, but MFM should be able to reduce the need for special efforts or provide an indigenous alternative. The total cost of improving nutrition makes broad replication for that purpose alone unlikely, though the ANP model offers great promise as an affordable system for achieving nutrition through integrated and participatory rural development.

**B. Recommendations**

1. The Project should target activities more directly to areas and families with highest incidence and severity of malnutrition, giving special attention to systematizing and expanding current efforts to assure that additional food produced in communities reaches those most in need of it.
2. The ANP village rating system should target more effectively by including rank in nutrition status and disaggregating by villages.

3. MFM should make special efforts to help field staff identify technical assistance needs, and to respond effectively to resulting requests for help, especially in data analysis and in comparing benefits and costs of alternative activities.
4. With additional technical help, the Project's information systems and data analysis plans should be revised to reflect more clearly the information requirements for assessing impact and the analysis useful in improving project design and effectiveness.
5. The Project needs to review criteria for evaluating changes in nutrition status of pregnant and lactating women. Evaluation should also include any feasible recording and analysis of birth weights and nutritional progress of the newborn.
6. Future dietary surveys should give special attention to measuring food consumption by children under five. This is more important than changes in total family intake and, though difficult to measure accurately, will indicate effectiveness of nutrition education in modifying the behavior most critical for improving nutrition. The Project presently lacks means for assessing efficacy of behavioral change efforts. Changes in total family consumption can be approximated by intermittent review of family income, market prices for food, and the changes in home production already being recorded.
7. ANP staff should plan now for replacement of, or diminishing the need for, a catalyst to facilitate inter-agency coordination at provincial and local levels. This is critical for sustaining current gains and no substitute for MFM has yet been identified and developed.
8. MFM and ANP staff should assess more carefully the comparative costs and benefits of ducks, fish, small animals, soybeans, backyard gardens and other alternatives for improving nutrition, paying special attention to a) time and costs of non-commercial production, b) costs per unit of calories and nutrients, c) influence of displacement and substitution on incremental nutrient output and consumption, and d) relation to nutrient and calorie deficits. The analysis depends on prior quantification of deficits. Help from an economist is as essential as nutritionist assistance.
9. MFM should reconsider its overemphasis on production and consumption of protein. Available data suggest that elimination of calorie deficits may be essential for assuring that protein consumption contributes to growth, and that lack of timely and adequate protein consumption may depend more on income and practices than on physical availability. The appropriate balance between efforts to increase output and those to assure consumption of it by the malnourished needs attention. Channelling may be cheaper than overemphasis on production.

10. MFM should review job descriptions and current activities of the Project's junior nutritionists and community development workers. It appears possible to increase effectiveness by giving priority to key activities, diminishing overextension of staff, and by reducing activities of marginal value.
11. ANP or MFM headquarters staff should, with appropriate technical help, review disaggregated data to assess more carefully significance of diarrhea disease as a determinant of malnutrition at various ages. If, as is likely, this variable has high causal importance in some pockets of malnutrition, a change in the balance between health and production-related activities will increase nutrition impact at no added cost. Current activities that may eventually diminish diarrhea (e.g., water, sanitation, food protection) are useful, but can have only modest or no influence on short-term nutrition status.
12. MFM should recognize that the ANP approach involves improving family and community small-farm management to increase likelihood of nutritional self-sufficiency. Changes in crop selection and introduction of fish and livestock, for example, form part of an implicit small-farm strategy. Use of simple proven techniques for preparing quantified small-farm models will clarify intermediate goals and assist in planning more appropriate interventions. This approach involves no inconsistency with the participatory approach of ANP.
13. MFM should continue efforts to emphasize, to AID and others, that the ANP model, including the Thailand adaptation, is a nutrition-oriented rural development effort. By tilting community development more toward nutrition, broadening consideration of other benefits, and spreading costs, the model reduces costs of nutrition improvement, integrates nutrition with other goals, and increases likelihood of extension to other areas. The MFM hypothesis that improved nutrition depends heavily on broad participation within communities in activities that contribute to general development requires some clarification and quantification. But it merits serious consideration for widespread application by AID.
14. Ideally, project responsibility should be transferred to a new local PVO with no hiatus, few staff changes and equal acceptance by the Provincial Government when the Project ends. Raising \$50,000 a year, along with continuation of the current Governmental contribution, would provide adequate funding for such an operation.

### C. Lessons Learned

ANP's initial outcomes and likely future impact emphasize for AID the importance of linking primary health care with a broad range of nutrition-related services, for more effective attainment

of nutrition and health goals. The more than \$7,000,000 spent during the 1974-1981 Lampang Health Development Project included insufficient attention to nutrition concerns and MFM baseline data reflect the omission. Links between malnutrition and infant health status frustrated Health Development Project efforts to improve health without addressing the causes of malnutrition. By increasing direct attention to nutrition in primary health care and by linking the broader health services to nutrition-related activities in other sectors, MFM has already demonstrated benefits of a more integrated approach. Although incremental impact of the approach and the optimum mix of services cannot yet be determined, the Project already provides a valuable lesson

The MFM process also emphasizes the key roles of high-level support, motivation, and participatory techniques in improving nutrition. MFM efforts gave "ownership" of the Project to national and provincial departments of health, the governor of Lampang, and village leaders, stimulating improved response among field staff and villagers. Oversimplified generalization about benefiting elites cannot hide the importance of involving leaders while building community participation in decisions and activities. Such admirable strategies as avoiding references to the "MFM Project" encourage ownership of the Project by Government staff and communities which is unusual among PVOs. This building of responsibility has produced measurable increases in the quantity and quality of activities. It also improves likelihood of institutionalization and sustainability.

The Thailand experience illustrates some important lessons about project management. Project proposals are written both to secure funds and to guide program implementation and evaluation. Flexibility and modification is required to plan and implement specific objectives, activities, and targets as constraints and conditions are defined during implementation. This is particularly evident where community participation is promoted and technical analysis (e.g. nutritional deficiencies) is imprecise. When project directors are unfamiliar with the proposal development process or are relatively inexperienced in technical matters, proposed activities and targets tend to be taken and pursued at face value, often to the detriment of broader project goals. MFM and AID should discourage rigid conformity to proposed targets, rewarding effective ongoing evaluation and mid-course correction. By viewing ANPs as hypotheses, rather than as rigid declarations, AID and MFM will improve project effectiveness.

MFM methods could be characterized as "enlightened top-down control" (See the Tandler Report, Questions for Evaluation, AID, 1982, but they involve a quantum jump in involvement of community over earlier governmental efforts in Lampang. MFM techniques give poor villagers a much greater voice. Though they do not always make final decisions, their increased involvement clearly produces more enthusiastic response when options are offered. MFM has set a good example for others to follow of how to resolve the inherent contradiction between responding to felt needs and pursuing its own goals, how to give thorough consideration to community views, how to share information, and how to explain to the community the reasons for decisions.

TABLE 1

Major Project Activities in Chronological Order, 1982

1. Task force training provided to District Health, Agriculture and Education Officers in training, planning and management; nutrition training for community development, agriculture, health workers, and primary school teachers; promotional visits to Community Development Committees; training in dietary and village food market surveys for extension workers. First dietary survey conducted.
2. Draft and field testing of nutrition education manual and pamphlet; implementation of food market survey; selection of two demonstration villages and two demonstration schools for model implementation of ANP activities.
3. Initiation of contact with local and international organizations to publicize ANP and solicit cooperation and assistance; nutrition surveillance systems established and monitoring begun in all program villages.
4. Quarterly Advisory Committee meetings instituted at Regional level; task force meetings begun with district level government officers.
5. Nutrition education materials developed and distributed, including seven pamphlets, two manuals, posters, a slide set, and flip charts; nutrition education initiated in demonstration villages for students, women's groups, health post volunteers and communicators; promotion of school lunch program; initiation of school garden and duck raising projects.
6. Revolving Loan Fund instituted through Village Development Committees; community development activities initiated: 97 backyard gardens, 636 families in soybean cultivation; 9,506 ducks distributed; promotion of water filtration tanks; smokeless cooking stoves, food cabinets; training in fish raising to 126 people and provision of fingerlings; village cleaning activities; organization of villagers into activity groups. Two artesian wells dug in Wang Kwai village of Ngao.
7. Training for villagers in soybean production; government worker and villager training in duck raising; training of government workers and school teachers in nutrition education, anthropometric and dietary survey techniques; health post volunteer and communicator training in nutrition and surveillance; monthly training for agriculture and health workers begun; villager training by health post volunteers. Reactivation of all but nine of 81 village committees; District Village Committee Meetings held in Sobprab and Ngao to analyze community development project problems; completion of second village level food surveys, anthropometric and dietary surveys.

8. Provincial workshop to improve integration of nutrition in government activities; organizational meeting among provincial and district agencies to strengthen nutrition education activities and coordination; plan bi-monthly health worker training; develop nutrition education programs for radio and television; form a Nutrition Consultant Committee to assist planning and training activities.
9. Parasite control program initiated including stool tests and purchase of control drugs.
10. Expansion of community development activities including backyard gardening, duck raising; fish ponds (254), and environmental sanitation (32 villages and schools participating). Food cabinets purchased or constructed (6,500); promotion of water catchment systems; initiation of bee keeping project.
11. Survey of duck raising showing 92% increase in families raising ducks; revolving loan fund reimbursement begun.
12. Nutrition education and growth surveillance activities continue; first intensive nutrition promotional campaign carried out; cooking contests held; four additional nutrition pamphlets prepared; third dietary survey completed.
13. Classification system for villages devised to target intensified project activity to less responsive villages.
14. Establishment of two district level distribution centers to provide nutrition education materials, agricultural inputs, and marketing assistance.
15. Provincial workshop on "National Nutrition Policy in Thailand" which reviewed ANP activities.

TABLE 2  
Project Expenses by Line Item and Year,  
Meals for Millions, Thailand, 1982-1984

Line Item	1982	1983	(Jan-Oct) 1984	Total	Percent
<u>In-Country Expenses</u>					
Personal services: Thailand (a)	7,020	18,982	20,500	46,502	13.9
Capital expenditures	-0-	539	14,470 (g)	15,009	4.5
Operating expenses (b)	1,428	3,847	2,662	7,937	2.4
Equipment and A/V materials (c)	267	494	2,985	3,746	1.1
Transportation and travel (d)	2,515	6,839	3,254	12,608	3.8
Equipment repair & maintenance	2,340	2,377	859	5,576	1.7
Small project grants (e)	-0-	5,666	4,550	10,216	3.0
Conferences and meetings (f)	4,270	6,540	6,475	17,285	5.2
Sub-Total	17,840	45,284	55,755	118,879	35.6
<u>Direct Support Costs</u>					
Personal services: U.S. (a)	35,404	50,279	45,170	130,853	39.1
Operating expenses: U.S. (b)	854	1,393	1,709	3,956	1.2
International & U.S. travel	13,168	19,784	15,763	48,715	14.6
Sub-Total	49,426	71,456	62,642	183,524	54.9
<u>Indirect Support Costs</u>					
Overhead	7,353	14,257	10,332	31,942	9.5
<u>Grant Total</u>	74,619	130,997	128,729	334,345	100.0
Percent of total expenses	22.3	39.2	38.5	100.0	
Target population	74,835	80,027	(85,579)		
Per capita expenditures	1.00	1.64	1.81		
AID and PACT contribution	(35,000)	(89,000)	(128,729)	(252,729)	
Percent contribution	(46.9)	(67.9)	(100.0)	(75.6)	

Source: Meals for Millions, central and field office records.

- Notes: (a) Includes: salaries, benefits, payroll taxes, consultant and professional fees.  
 (b) Includes: supplies, telephone/telex, postage, printing, insurance, and miscellaneous.  
 (c) Includes: publications, audio/visual materials, and small equipment.  
 (d) Includes: local travel and per diem; also Project Manager trip to Asian nutrition conference in Bangkok (1983), senior nutritionist to community development seminar in Korea (1983), and community development specialist trip to Korea in (1984).  
 (e) Includes: vegetable seeds, fingerlings, parasite medicine, ducklings, and soybean seed.  
 (f) Includes: training expenses.  
 (g) Cost of Toyota 4WD pick-up (\$13,554) should be amortized over 5 years.  
 ( ) Estimated figures.

TABLE 3

Personnel Utilization By Position; July 1982 to December 1984

Position	Number of Positions	Number Persons Employed	Total Person Months	Percent Allocation Total Time	Number Months Vacant	Percent Time Vacant
Project Manager	1	1	30	14.6	0	0.0
Senior Nutritionist	1	2 (a)	21.5	10.5	8.5	28.3
Community Development Specialist	1	1	29	14.1	1	3.3
Junior Nutritionist	3 (b)	4	74	36.0	0	0.0
Community Development Assistant	1 (c)	1	1	5.3	1	8.3
Secretary/typist	1	1	25	12.2	5	16.7
Accountant	1 (d)	1	15	7.3	0	0.0
Total	9	11	205.5	100.00	15.5	7.0

Source: Meals for Millions/Thailand program records.

(a) Part-time as of April 1984

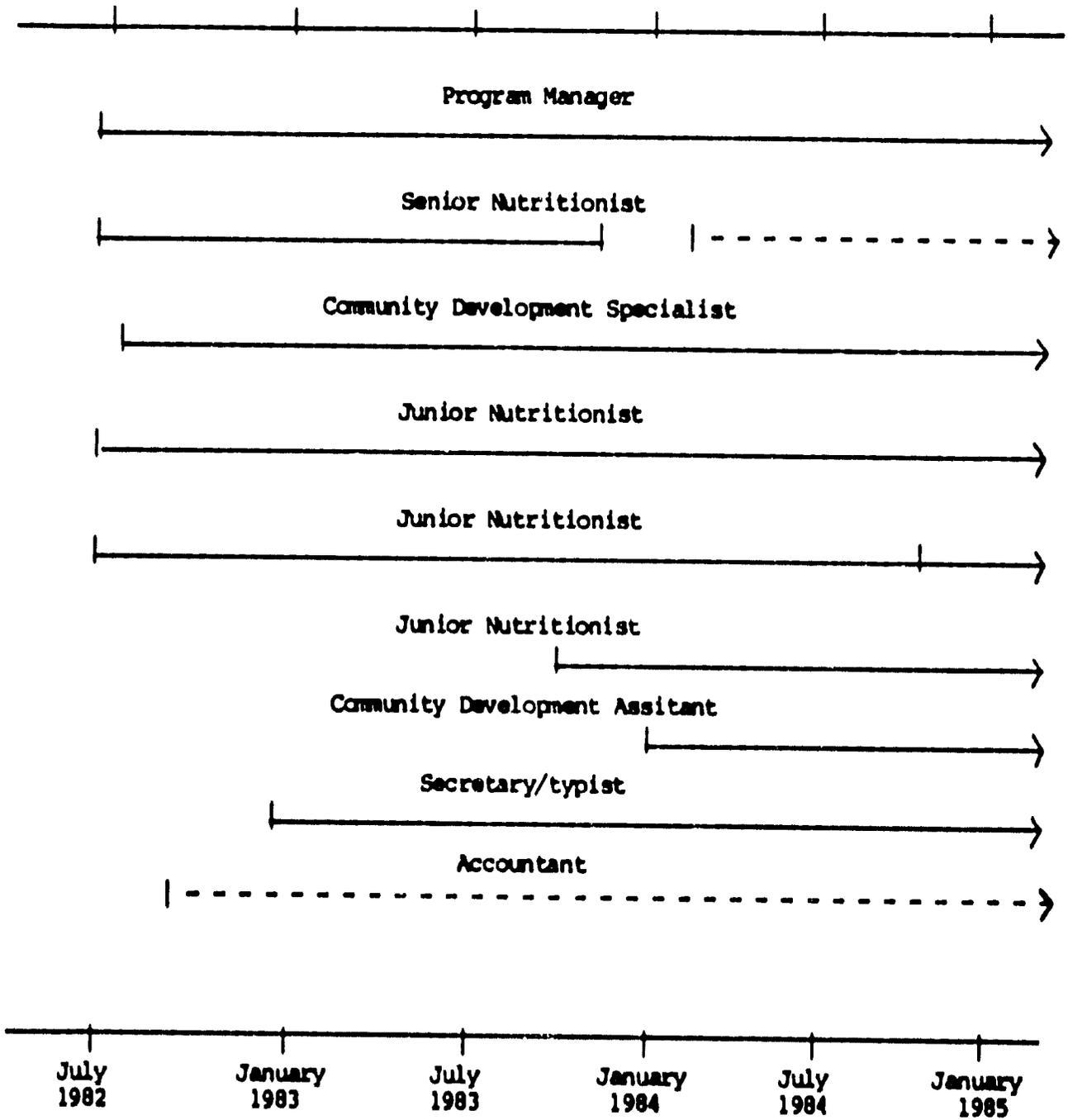
(b) A second nutritionist was assigned to Njao District in November 1983

(c) Position created in January 1984

(d) Part-time

FIGURE 4

Staffing Pattern, Meals for Millions/Thailand  
July 1982 - December 1984



\_\_\_\_\_ Full Time  
- - - - - Part Time  
|\_\_\_\_\_ | Employment begins, ends

TABLE 5  
Contributions of Participating Agencies  
in the Lampung ANP

GOVERNMENT AGENCIES

- Ministry of Public Health: Legal sponsor since initiation of ANP in 1981.
- Department of Health and Nutrition: Gave technical support in nutrition, reviewed curriculum, collaborated on food intake and training and appointed Project Director, Coordinators, and Deputy Project Director.
- Lampung Provincial Governor: Supervised and monitored ANP activities.
- Lampung Provincial Vice Governor: The Chairperson of MFM/Lampung ANP Project Advisory Committee.
- Department of Agriculture: Provided training and technical assistance for the vegetable gardens, soybean production, small animal raising and the fish pond projects.
- Department of Community Development: Helped to promote community input into project, especially by reactivating village development committees.
- Department of Education: Participated in the training of teachers for nutrition education classes in schools. Also helped with small animal raising, fish ponds and school gardens, as well as, the anthropometric and food intake surveys.
- Regional Nutrition Center: Provided technical assistance in nutrition activities and participated as a member of the advisory committee.
- Regional Sanitation Center: Provided technical assistance and training for the water and latrine projects, and environmental sanitation activities.
- Regional Family Planning Center: Gave technical assistance in family planning activities, provided facilities for workshops and trainings, and loaned transportation to the project, and served as a member of technical consultant committee of MFM/Thailand ANP.
- Regional Non-Formal Education Center: Provided training and technical assistance for feasibility study on small animal raising project, developed material on nutrition education and community development activities.
- Agriculture Research Institute: Gave technical assistance in vegetable gardens and other agricultural products.

## Contributions of Participating Agencies (Cont.)

Provincial Health Officer: Served as a counterpart agency in Lampang Province. Provided office space, equipment and transportation as needed. Acted as the Field Project Director for the program.

Lampang Midwives College: Gave technical assistance and trained health workers in nutrition education.

Lampang Nurse College: Gave technical assistance and trained health workers in nutrition education, and developed audio-visual materials for training.

### NON-GOVERNMENT AGENCIES

UNICEF/Thailand: Provided technical assistance in nutrition education and material development.

Mahidol University: Provided technical assistance and developed audio-visual materials for education and training of MFM staff, and assisted in planning of MFM sponsored workshops.

Chiang Mai University: Gave technical assistance in nutrition education and rural development activities, and participated in MFM sponsored workshops.

Chiang Rai Teachers College: Gave technical assistance in audio-visual materials and helped with training.

Rotary Club, Lampang: Donated 3 incubators for duck raising project. Participated in the program as a member of Advisor committee.

Lions Club, Lampang: Participated as a member of advisory committee.

Lampang TV Station: Provided public relation service for ANP activities.

Lampang Radio Station: Provided public relation services for ANP activities.

IBM/Thailand: Donated US8,000 for the project and assisted with in-country fund-raising activities for MFM.

The Church of Christ/Thailand: Endorsed MFM program in Thailand.

SVITA Foundation: Gave technical consultation on community development.

Agriculture Research Service, USDA-Chiang Mai: Provided technical consultation on Agricultural activities.

Contributions of Participating Agencies (Cont.)

Lampang Provincial Hospital: Gave technical assistance in Nutrition education and surveillance activities.

District hospital: Provided basic medical services for the program and participant training program.

Mr. Prachaya Boonchv: Chief Prosecutor for Lampang Provincial Court. Provided initial fingerlings for both Districts.

Table 6

Summary of Training Activities by Target Group

Month	Trainees	Number Sessions	Cumulative Hours of Training	Total People Trained	Topics	
June 1983	VHV, HC	10	10	115	Nutrition deficiencies Basic food groups Soybean supplementary food	
	Women Group	2		246		
	Preschool Children	1		602		
July 1983	VHV, HC	10	13	116	Food preservation Balance diet Energy food and food habit	
	Village women	2		76		
	Preschool children	1		38		
Aug. 1983	VHV	10	8	17	Food for school children Supplementary food, body building food Basic food group, Soybean milk feeding	
	Village women	2		13		
	Primary school children	1		5		517
Sept. 1983	VHV, HC	10	32	69	Nutrition problems Energy food	
	Primary school children	2		16		403
	Village women	2	10	59	Nutrition problems  Supplementary Food for Preschool Children	
	Mothers	2		20		
	Child Nutrition Center	2		9		
Oct. 1983	VHV, HC	12	35	206	Nutrition problems, Anthropometric measurement Nutrition deficiencies, Basic food groups  Food for preschool children	
	Primary School Children	4		7		172
	Village women	2		18		97
Nov. 1983	VHV, HC	10	53 1/2	186	Food for preschool children, Nutrition problem, Anthropometric survey Regulating food, school lunch program  Food for preschool children, Infant food	
	Primary school children	2		9		100
	Village women	2		25 1/2		342

Summary of Training Activities by Target Group (con't.)

Month	Trainees	Number Sessions	Cumulative Hours of Training	Total People Trained	Topics
Nov. 1983 (con't.)	Mothers Child Nutrition Center	10 4	25 5	53 30	Food for pregnant women Luncheon program
Dec. 1983	VHV, HC  Primary school children Village women Mothers  Child Nutrition Center	12  1  1  2  4	58  17  6  10  6	94  80  181  45  27	Food sanitation, Nutrition problems Nutrition and backyard garden  Food sanitation, Luncheon program Food for preschool children, infant food Health sanitation, luncheon program
Jan. 1984	VHV, HC  Primary school children Village women Mothers  Child Nutrition Center	10  2  10  12  10	44  3  45  30  12	531  100  335  81  62	Basic food group, food sanitation, food value Luncheon program  Food for preschool children, community food source Food for preschool children, supplementary food, food for pregnant women and lactating mothers Luncheon program food sanitation, personal
Feb. 1984	VHV, HC  Primary school children Village women Mothers	10  4  10  2	24 1/2  5  19  13	139  20  177  19	Food consumption and food value Food sanitation  Food for pregnant women and lactating mothers Food for lactating mother and pregnant women, food preservation

Summary of Training Activities by Target Group (con't.)

Month	Trainees	Number Sessions	Cumulative Hours of Training	Total People Trained	Topics
Feb. 1984 (con't.)	Child Nutrition Center	4	5	35	Personal hygiene, lunch feeding program
	Anthropometric survey	—	10	216	Weight and height measurement plot growth chart
Mar. 1984	VHV, HC	12	50	159	Food sanitation, food poison
	Primary school children	4	18	153	Food for preschool children
	Village women	12	32	236	Soybean milk, food for preschool children
	Mothers	12	64	100	Food sanitation, housing sanitation
	Preschool children	4	36	356	Food for preschool children
Apr. 1984	Village women	2	18	222	Supplementary food, Food sanitation
	Child Nutrition Center	4	3	17	Lunch feeding program
May 1984	VHV, HC	10	6	30	Infant food
	Primary school children	2	—	173	Personal hygiene, lunch feeding program
	Village women	6	7	46	Infant food
June 1984	VHV, HC	10	3	184	Distributed pamphlet, balance diet
	Primary school children	2	—	652	—
	Village women	6	20	999	Balance diet
	Mothers	10	22	18	Food for pregnant women and lactating mothers

Summary of Training Activities by Target Group (con't.)

Month	Trainees	Number Sessions	Cumulative Hours of Training	Total People Trained	Topics
July 1984	VHV, HC	10	23	137	Using of the pamphlet, distributed pamphlet Food taboo, personal hygiene, food sanitation Necessary food, backyard garden Basic food groups, energy food Personal hygiene, lunch feeding program
	Primary School Children	2	3	647	
	Village women	6	6	254	
	Mothers	2	24	113	
	Child Nutrition Center	1	12	118	
Aug. 1984	VHV, HC	10	20	202	What is Nutrition? Distributed pamphlet What is Nutrition?  Food for pregnant women and lactating mother Food hygiene, luncheon program
	Primary school children	2	4	128	
	Village women	6	18	346	
	Child Nutrition Center	2	31	157	

TABLE 7

Summary of Training Activities: Government Workers, 1982 - 1984

MONTH	TRAINEES	NUMBER SESSIONS	CUMULATIVE HOURS OF TRAINING	TOTAL PEOPLE TRAINED	TOPICS
Sept. 1982	Health workers C.D. workers Agriculture extension School teachers	1	4	110	<ul style="list-style-type: none"><li>- Introduction to T/ANP</li><li>- Basic nutrition</li><li>- Baseline survey</li></ul>
Oct. 1982	<u>Task Force</u> District chiefs District health, education, C.D. and agricultural chiefs	1	1	20	<ul style="list-style-type: none"><li>- Clarification of objectives, strategies, policies of T/ANP</li><li>- Identify intersectoral support system for community development</li><li>- Determine agency roles and responsibility</li></ul>
June 1983	<u>Task Force</u> District chiefs, District health, education, C.D. and agriculture chiefs	1	1	19	<ul style="list-style-type: none"><li>- Implementation problems and solutions</li><li>- Strengthening coordination and cooperation among field workers</li></ul>
Oct. 1983	School teachers Sub-district health, education, C.D. and agriculture workers	2	6	115	<ul style="list-style-type: none"><li>- Basic nutrition</li><li>- Nutrition surveillance</li><li>- Integration of C.D. activities and N.E.</li></ul>

Summary of Training Activities: Government Workers (con't.)

MONTH	TRAINEES	NUMBER SESSIONS	CUMULATIVE HOURS OF TRAINING	TOTAL PEOPLE TRAINED	TOPICS
Apr. 1984	Task Force District chiefs District health, education, C.D. and agriculture chiefs Health Promotion Chief	1	1	19	<ul style="list-style-type: none"> <li>- Nutrition surveillance</li> <li>- Nutrition education in community and school</li> <li>- coordination of C.D. activities</li> </ul>
May 1984	Sub-district health workers, Home economist	1	3	21	<ul style="list-style-type: none"> <li>- Dietary survey method and practice</li> </ul>
Aug. 1984	School teachers, Sub-district health, agriculture extension, home econ- omist, and C.D. workers	2	4	116	<ul style="list-style-type: none"> <li>- Review of T/ANP concepts</li> <li>- Implementation problems and integration of N.E. and C.D. activities</li> <li>- Second baseline survey</li> </ul>
Jan. 1983 to Mar. 1984	Sub-district health, / education, C.D. and agriculture workers	1 per month	3 hours each	35-45	<ul style="list-style-type: none"> <li>- Nutrition problems and solution</li> <li>- Basic nutrition</li> <li>- Coordination and cooperation</li> <li>- Food sanitation</li> <li>- Supplementary feeding</li> <li>- Community development activities</li> </ul>

TABLE 8

## Coverage of Community Development Activities By Sub-District, Ngao and Sobprab Districts, August 1984

Sub-District	Number Households <sup>a</sup>	Duck Raisers		Family Gardens		Soybean Planter		Fish Ponds		Food Cabinet		Water Filter		Latrines	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<u>Ngao District</u>															
Ban Rong	1,148	118	10.3	400	34.8	62	5.4	10	0.9	557	48.5	45	3.9	610	53.1
Pong Tao	1,395	97	7.0	321	23.0	33	2.4	18	1.3	720	51.6	18	1.3	933	66.9
Na Kae	630	34	5.4	158	25.1	36	5.7	6	1.0	227	36.0	1	0.2	245	38.9
Luang Tai	1,154	70	6.1	357	30.9	136	11.8	25	2.2	547	47.4	28	2.4	616	53.4
Ban Orn	831	53	6.4	96	11.6	3	0.4	2	0.2	251	30.2	0	0.0	376	45.2
Ban Haeng	1,262	122	9.7	206	16.3	23	1.8	3	0.2	547	43.3	8	0.6	589	46.7
Ban Pong	1,343	76	5.7	299	22.3	233	17.3	16	1.2	516	38.4	3	0.2	473	35.2
Ban Huad	711	47	6.6	122	17.2	9	1.3	8	1.1	205	28.8	2	0.3	286	40.2
Mae Teeb	738	44	6.0	197	26.7	47	6.4	8	1.1	204	27.6	0	0.0	306	41.5
Luang Nua	1,097	40	3.6	49	4.5	7	0.6	2	0.2	397	36.2	19	1.7	439	40.0
Sub-Total	10,309	701	6.8	2,205	21.4	589	5.7	98	1.0	4,171	40.5	124	1.2	4,873	47.3
<u>Sobprab District</u>															
Samai	1,248	69	5.5	308	24.7	35	2.8	58	4.6	883	70.8	14	1.1	873	70.0
Na Yang	910	56	6.2	383	42.1	22	2.4	29	3.2	625	68.7	51	5.6	564	62.0
Mae Kua	941	95	10.1	591	62.8	11	1.2	15	1.6	630	67.0	120	12.8	740	78.6
Sobprab	1,855	119	6.4	815	43.9	27	1.5	34	1.8	1,359	73.3	85	4.6	1,244	67.1
Sub-Total	4,954	339	6.8	2,097	42.3	95	1.9	136	2.7	3,497	70.6	270	5.5	3,421	69.1
<b>GRAND TOTAL</b>	<b>15,263</b>	<b>1,040</b>	<b>6.8</b>	<b>4,302</b>	<b>28.2</b>	<b>684</b>	<b>4.5</b>	<b>234</b>	<b>1.5</b>	<b>7,668</b>	<b>50.2</b>	<b>394</b>	<b>2.6</b>	<b>8,294</b>	<b>54.3</b>

Source: Meals for Millions/Thailand, Summary report of C.D. activities — \* 1983 official government statistics

**FIGURE 9**

**Coverage of Community Development Activities in Sobprab and Ngao Districts, August 1984**

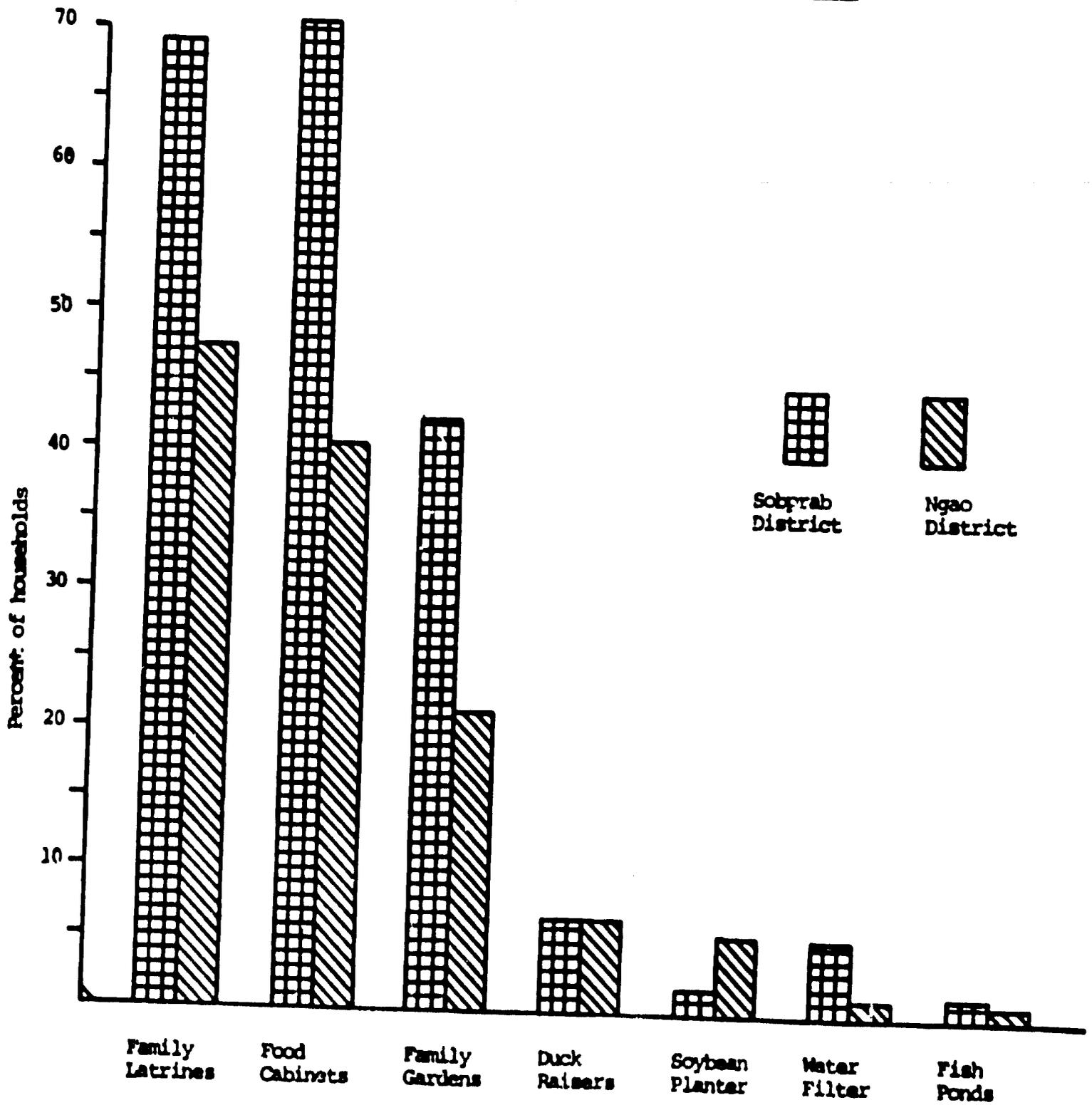


TABLE 10

Rank Correlation of Community Development Activity Coverage to Nutritional Status of Children Under Five Years of Age by Sub-District, Ngao and Sobprab Districts, 1984 #

Sub-District	Nutrition Status *	Duck Raisers	Duck per 100 Population	Family Gardens	Soybean Planter	Fish Ponds	Food Cabinets	Water Filters	Home Latrines	Average Rank CD	Rank Activities
<u>Ngao District</u>											
Ban Rong	14	1	3	4	5	11	6	4	6	( 5.0)	4
Rong Tao	8	4	6	9	7	6	5	7	4	( 6.0)	5
Na Kae	10	13	13	7	4	10	11	11	13	(10.3)	12
Luang Tai	6	9	11	5	2	3	7	5	7	( 6.1)	6
Ban Orn	9	6	9	13	14	12	12	13	8	(10.9)	13
Ban Haeng	1	3	4	12	9	12	8	9	9	( 8.3)	8
Ban Rong	13	11	8	10	1	7	9	11	14	( 8.9)	9
Ban Huad	3	5	7	11	11	8	13	10	11	( 9.5)	10
Mae Teab	11	10	12	6	3	8	14	13	10	( 9.5)	10
Luang Nua	2	14	14	14	13	12	10	6	12	(11.9)	14
<u>Sobprab District</u>											
Samai	12	12	10	8	6	1	2	8	2	( 6.1)	6
Na Yang	5	8	5	3	7	2	3	2	5	( 4.4)	3
Mae Kua	7	2	2	1	12	5	4	1	1	( 3.3)	1
Sobprab	3	6	1	2	10	4	1	3	3	( 3.8)	2
Correlation Coefficient	+1,000	+ .095	+ .149	- .202	- .604	- .004	- .035	+ .303	+ .004	—	- .022

Source: Tables

\* Gomez classification, percent of normal and first degree malnutrition, weight by age, based on Thai norms.

# Nutrition surveillance, November 1984; community development activities, August 1984.

TABLE 11

Prevalence of Malnutrition \* in Children Under Five Years of Age  
By Sub-District, Ngao and Sobprab Districts, 1982 - 1984

MARCH 1982

Sub-District	Children Weighed	Percent of Total	Percent Normal	Percent 1st Deg.	Percent 2nd Deg.	Percent 3rd Deg.
<u>Ngao District</u>						
Ban Fong	251	89.9	39.4	42.3	11.3	7.0
Fong Tao	301	100.0	71.4	24.5	4.1	0.0
Na Kae	198	100.0	43.7	39.8	11.6	4.9
Luang Tai	313	100.0	18.5	55.4	26.1	0.0
Ban Orn	299	81.4	51.0	37.5	11.5	0.0
Ban Haeng	180	100.0	41.5	56.1	2.4	0.0
Ban Fong	336	100.0	49.5	39.1	9.5	0.0
Ban Huad	391	100.0	35.6	24.1	24.1	16.2
Mae Teeb	259	86.7	44.3	37.8	16.0	1.9
Luang Nua	226	87.5	67.8	28.2	3.6	0.4
Sub-Total	2,754	92.8	49.4	34.6	12.1	3.9
<u>Sobprab District</u>						
Samai	223	98.9	57.9	29.4	11.6	1.1
Na Yang	260	77.9	58.1	36.3	5.6	0.0
Mae Kua	271	100.0	56.7	34.8	8.5	0.0
Sobprab	498	80.7	61.7	33.5	4.8	0.0
Sub-Total	1,252	87.6	59.1	33.3	7.4	0.2
GRAND TOTAL	4,006	90.2	54.3	33.9	9.8	2.0

Source: Provincial Health Department (MOPH), District nutrition surveillance records.  
 \* Gomez classification, weight by age, based on Thai norms.

Prevalence of Malnutrition \* in Children Under Five Years of Age  
By Sub-District, Ngao and Sobprab Districts, 1982 - 1984 (con't.)

M A R C H 1 9 8 3

Sub-District	Children Weighed	Percent of Total	Percent Normal	Percent 1st Deg.	Percent 2nd Deg.	Percent 3rd Deg.
<u>Ngao District</u>						
Ban Rong	278	100.0	47.8	38.2	10.8	3.2
Pong Tao	326	92.6	70.2	23.8	5.3	0.7
Na Kae	222	86.4	60.9	27.6	9.4	2.1
Luang Tai	353	88.8	45.4	38.6	16.0	0.0
Ban Oen	325	82.5	67.2	26.1	6.7	0.0
Ban Haeng	189	54.5	35.9	56.3	7.8	0.0
Ban Pong	352	90.6	58.6	32.9	7.2	1.3
Ban Huad	418	100.0	42.8	33.3	21.5	2.4
Mae Teeb	311	85.2	43.4	42.6	13.6	0.4
Luang Nua	257	93.0	61.5	33.1	5.0	0.4
Sub-Total	3,031	88.9	53.8	34.0	11.2	1.0
<u>Sobprab District</u>						
Samai	286	53.1	61.3	27.6	9.8	1.3
Na Yang	298	75.1	55.4	40.2	4.0	0.4
Mae Kua	298	87.9	43.2	40.5	16.0	0.3
Sobprab	529	86.6	53.9	42.2	3.9	0.0
Sub-Total	1,411	77.6	52.6	39.3	7.7	0.4
<b>GRAND TOTAL</b>	<b>4,442</b>	<b>83.3</b>	<b>53.2</b>	<b>36.7</b>	<b>9.4</b>	<b>0.7</b>

Source: Provincial Health Department (MOPH), District nutrition surveillance records.  
 \* Gomez classification, weight by age, based on Thai norms.

Prevalence of Malnutrition \* in Children Under Five Years of Age  
By Sub-District, Ngao and Sobprab Districts, 1982 - 1984 (con't.)

M A R C H 1 9 8 4

Sub-District	Children Weighed	Percent of Total	Percent Normal	Percent 1st Deg.	Percent 2nd Deg.	Percent 3rd Deg.
<u>Ngao District</u>						
Ban Rong	298	96.9	48.8	38.4	11.1	1.7
Rong Tao	493	85.4	64.9	27.5	7.4	0.2
Na Kae	254	93.7	58.8	32.8	7.6	0.8
Luang Tai	437	96.1	76.9	22.1	1.0	0.0
Ban Orn	340	88.5	74.1	21.9	4.0	0.0
Ban Haeng	265	100.0	69.1	29.4	1.5	0.0
Ban Pong	376	98.0	60.2	31.2	7.2	1.4
Ban Huad	348	98.0	62.2	30.5	4.7	2.6
Mae Teeb	334	90.1	51.5	42.8	5.0	0.7
Luang Nua	256	96.5	78.2	19.4	2.4	0.0
Sub-Total	3,401	98.7	64.8	29.3	5.2	0.7
<u>Sobprab District</u>						
Samai	330	67.8	59.4	27.2	13.4	0.0
Na Yang	312	93.6	65.8	30.1	4.1	0.0
Mae Kua	272	77.2	42.4	48.6	9.0	0.0
Sobprab	534	94.2	67.7	30.4	1.9	0.0
Sub-Total	1,448	84.9	61.4	32.8	5.8	0.0
<b>GRAND TOTAL</b>	<b>4,849</b>	<b>91.8</b>	<b>63.1</b>	<b>31.1</b>	<b>5.5</b>	<b>0.3</b>

Source: Provincial Health Department (MOPH), District nutrition surveillance records.  
 \* Gomez classification, weight by age, based on Thai norms.

TABLE 12

Prevalence of Malnutrition \* in Children Under Five Years of Age  
By Sub-District, Ngao and Sobprab Districts, November 1984

Sub-District	Number Percent Weighed	Percent of Total Children	Normal Weight		First Degree		Second Degree		Third Degree	
			No.	%	No.	%	No.	%	No.	%
<u>Ngao District</u>										
Ban Rong	346	100.0	190	54.9	119	34.4	36	10.4	1	0.3
Pong Tao	499	98.0	301	60.3	171	34.3	27	5.4	0	0.0
Na Kae	196	79.0	111	56.6	72	36.8	12	6.1	1	0.5
Luang Tai	398	95.9	269	67.6	109	27.4	15	3.8	5	1.2
Ban Orn	330	95.4	202	61.2	108	32.7	20	6.1	0	0.0
Ban Haeng	344	100.0	305	88.7	39	11.3	0	0.0	0	0.0
Ban Pong	307	91.1	193	62.9	87	28.3	22	7.2	5	1.6
Ban Huad	339	98.5	250	73.7	80	23.6	9	2.7	0	0.0
Mae Teeb	308	95.1	166	53.9	120	39.0	22	7.1	0	0.0
Luang Nua	294	100.0	243	82.6	47	16.0	4	1.4	0	0.0
Sub-Total	3,361	95.8	2,230	66.3	952	28.3	167	5.0	12	0.4
<u>Sobprab District</u>										
Samai	256	83.9	139	54.3	95	37.1	20	7.8	2	0.8
Na Yang	284	96.9	170	59.9	104	36.6	10	3.5	0	0.0
Mae Kua	265	100.0	133	50.2	118	44.5	14	5.3	0	0.0
Sobprab	490	93.7	331	67.5	146	29.8	13	2.7	0	0.0
Sub-Total	1,295	93.4	773	59.7	463	35.7	57	4.4	2	0.2
GRAND TOTAL	4,656	95.2	3,003	64.5	1,415	30.4	224	4.8	14	0.3

Source: Provincial Health Department (MOPH), District nutrition surveillance records.  
 \* Gomez classification, weight by age, based on Thai norms.

FIGURE 13

Prevalence of Second and Third Degree Malnutrition by Sub-District,  
Ngao and Sobrab Districts, Lampang Province, 1982-1984

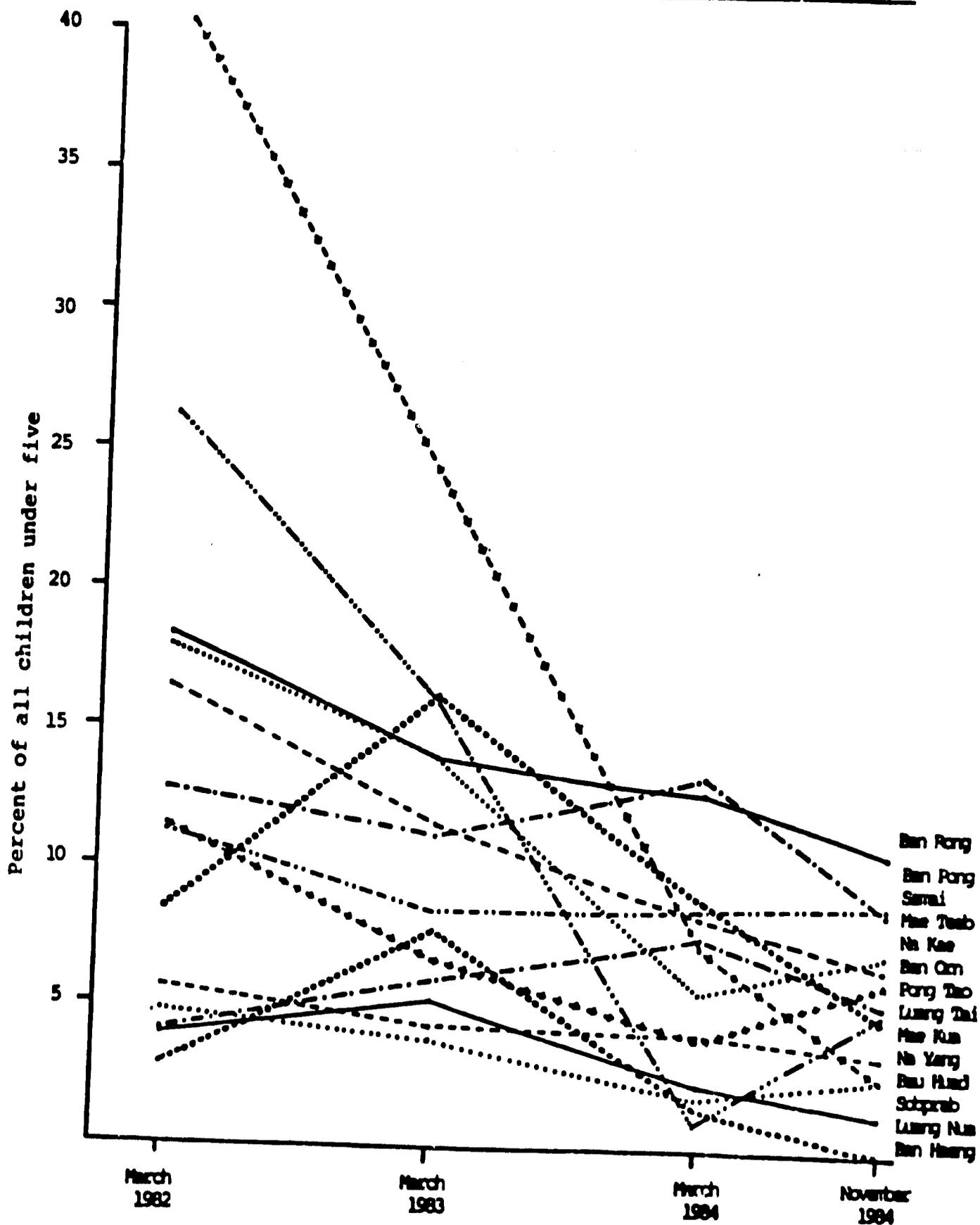


TABLE 14

Rate of Change \* in Prevalence of Second and Third Degree Malnutrition in Children Under Five Years of Age by Sub-District, Ngao and Sobprab Districts, 1982 - 1984 and 1983 - 1984

Sub-District	March 1982 to November 1984	March 1983 to November 1984
<u>Ngao District</u>		
Ban Rong	- 41.5	- 23.6
Pong Tao	+ 31.7	- 10.0
Na Kae	- 60.0	- 42.6
Luang Tai	- 80.8	- 68.8
Ban Orn	- 47.0	- 9.0
Ban Haeng	- 100.0	- 100.0
Ban Pong	- 22.8	+ 3.5
Ban Huad	- 93.3	- 88.7
Mae Teeb	- 60.3	- 49.3
Luang Nua	- 65.0	- 74.1
Sub-Total	- 66.3	- 55.7
<u>Sobprab District</u>		
Samai	- 32.3	- 22.5
Na Yang	- 37.5	- 20.5
Mae Kua	- 37.6	- 67.5
Sobprab	- 43.8	- 30.8
Sub-Total	- 32.9	- 43.2
 GRAND TOTAL	 - 56.8	 - 49.5

Source: Tables

\* ( - ) decrease; ( + ) increase

TABLE 15

Prevalence of Malnutrition\* in Children Under Five Years of Age  
in Selected Districts, Lampang Province, 1978

District	Number Children Weighed	Normal Weight		First Degree		Second Degree		Third Degree	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Sern Ngam	2,326	958	41.2	1,001	43.0	302	13.0	65	2.8
Ko Kha	3,909	2,203	56.4	1,327	33.9	294	7.5	85	2.2
Sobprab	2,176	1,109	51.0	818	37.6	209	9.6	40	1.8
Thern	3,958	1,824	46.1	1,648	41.6	413	10.4	73	1.9
Mae Prik	1,269	708	55.8	434	34.2	101	8.0	26	2.0
<b>TOTAL</b>	<b>13,638</b>	<b>6,802</b>	<b>49.9</b>	<b>5,228</b>	<b>38.3</b>	<b>1,319</b>	<b>9.7</b>	<b>289</b>	<b>2.1</b>

Source: Meals for Millions. Thailand Applied Nutrition Program, Proposal to PACT.

\*Gomez classification, weight by age, based on Thai norms.

TABLE 16

Prevalence of Malnutrition \* in Children Under Five Years of Age  
By Sub-District, Ngao and Sobprab Districts, 1982 - 1984

M A R C H 1 9 8 2					
Sub-District	Children Weighed	Percent Normal	Percent 1st Deg.	Percent 2nd Deg.	Percent 3rd Deg.
Wang Neua	966	45.7	40.9	12.2	1.2
Chae Hom*	768	50.0	36.7	12.8	0.5
Ngao	2,754	49.4	34.6	12.1	3.9
Mae Moh	244	77.9	15.6	3.7	2.8
Muang	5,213	56.0	38.5	4.9	0.6
Harrng Chart	2,036	63.5	24.6	8.1	3.8
Serm Ngam	880	39.3	44.2	14.3	2.2
Ko Kha	740	87.4	11.5	1.1	0.0
Mae Tha	476	68.5	23.3	8.2	0.0
Sobprab	1,252	59.1	33.3	7.4	0.2
Thern	2,401	60.3	30.6	7.9	1.2
Mae Prik	124	85.5	13.7	0.8	0.0
<b>Total</b>	<b>17,854</b>	<b>61.4</b>	<b>29.3</b>	<b>7.9</b>	<b>1.4</b>

Source: Provincial Health Department (MOPH), Nutrition Surveillance System.

\* Gomez classification, weight by age, based on Thai norms.

+ less than 0.1 percent.

Prevalence of Malnutrition \* in Children Under Five Years of Age  
By Sub-District, Ngao and Sobprab Districts, 1982 - 1984 (Con't.)

M A R C H 1 9 8 3

Sub-District	Children Weighed	Percent Normal	Percent 1st Deg.	Percent 2nd Deg.	Percent 3rd Deg.
Wang Neua	1,975	54.7	35.3	9.0	1.0
Chae Hom*	2,811	55.4	38.0	6.4	0.2
Ngao	3,031	53.8	34.0	11.2	1.0
Mae Moh	803	56.0	36.9	6.7	0.4
Muang	4,856	69.3	25.7	4.6	0.4
Harn Chart	2,586	72.8	24.1	3.1	0.1
Serm Ngam	1,184	53.4	37.2	8.6	0.8
Ko Kha	634	73.2	23.3	3.3	0.2
Mae Tha	798	67.2	27.2	4.8	0.8
Sobprab	1,411	52.6	39.3	7.7	0.4
Thern	1,047	64.2	29.6	5.9	0.3
Mae Prik	792	68.2	26.1	5.6	0.1
<b>Total</b>	<b>21,928</b>	<b>60.4</b>	<b>32.4</b>	<b>6.7</b>	<b>0.5</b>

Source: Provincial Health Department (MOPH), Nutrition Surveillance System.

\* Gomez classification, weight by age, based on Thai norms.

+ less than 0.1 percent.

Prevalence of Malnutrition \* in Children Under Five Years of Age  
By Sub-District, Ngao and Sobprab Districts, 1982 - 1984 (Con't.)

M A R C H 1 9 8 4

Sub-District	Children Weighed	Percent Normal	Percent 1st Deg.	Percent 2nd Deg.	Percent 3rd Deg.
Wang Neua	2,521	60.6	33.9	5.3	0.2
Chae Hom*	3,750	53.8	39.4	6.7	0.1
Ngao	3,401	64.8	29.3	5.2	0.7
Mae Moh	1,231	57.4	31.3	10.0	1.3
Muang	5,351	75.3	21.7	2.7	0.3
Haing Chart	5,329	77.7	20.4	1.9	+
Serm Ngam	1,443	61.9	33.0	4.8	0.3
Ko Kha	2,677	79.9	18.1	1.9	0.2
Mae Tha	3,309	70.2	22.9	5.8	1.1
Sobprab	1,448	61.4	32.8	5.8	0.0
Thern	2,658	74.8	21.1	3.8	0.3
Mae Prik	893	74.0	23.9	2.1	0.0
<b>Total</b>	<b>34,011</b>	<b>66.5</b>	<b>28.3</b>	<b>4.9</b>	<b>0.3</b>

Source: Provincial Health Department (MOPH), Nutrition Surveillance System.

\* Gomez classification, weight by age, based on Thai norms.

+ less than 0.1 percent.

FIGURE 17

Prevalence of Second and Third Degree Malnutrition by District, Lampang Province, 1978-1984

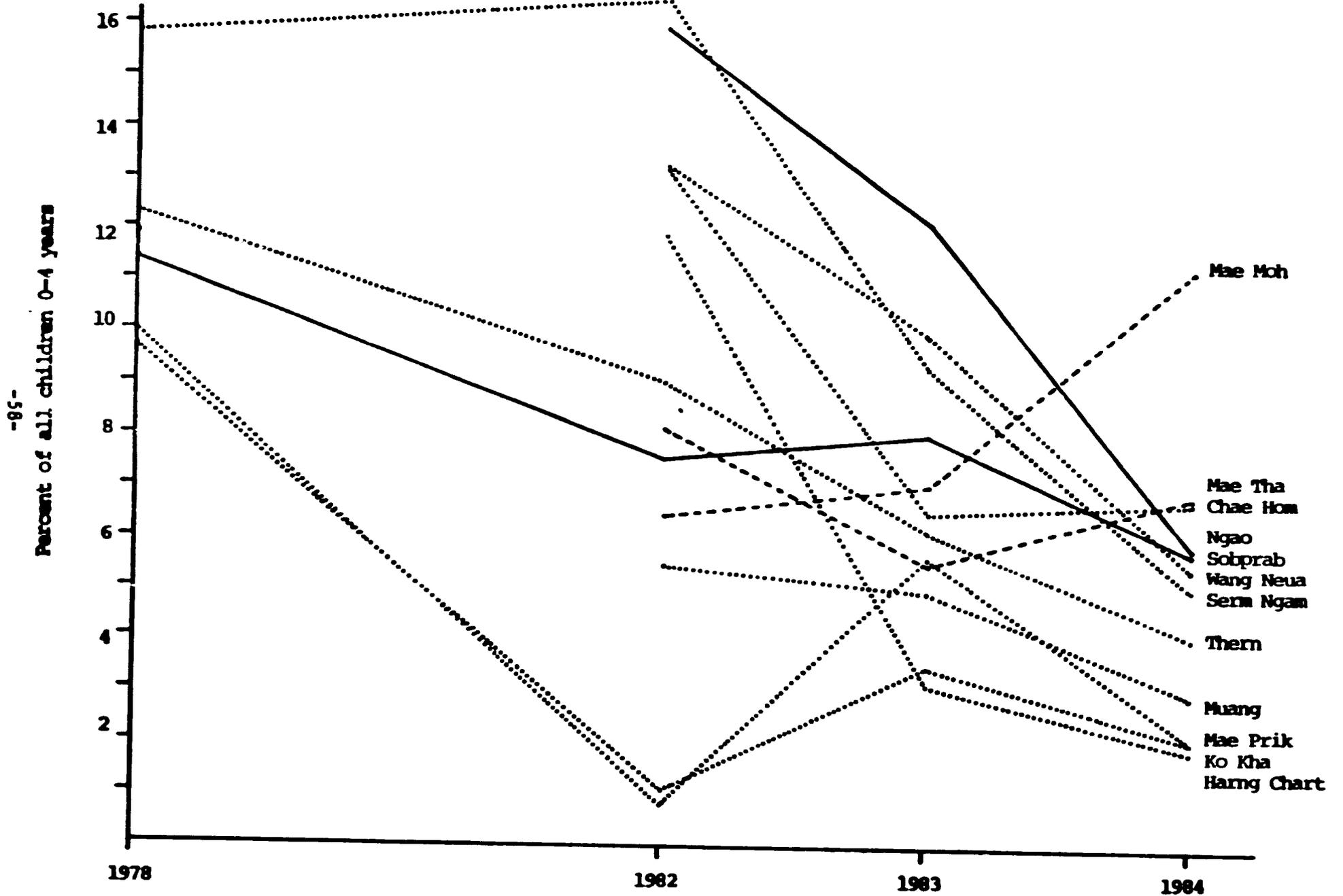


TABLE 18

Rate of Change\* in Prevalence of Second and Third  
Degree Malnutrition in Children Under Five Years of Age  
by District, Lampang Province, 1982-1984 and 1983-1984

District	March 1982 to March 1984	March 1983 to March 1984
Wang Neua	-59%	-45%
Chae Hom	-49%	+ 3%
Ngao	-63%	-52%
Mae Moh	+74%	+59%
Muang	-45%	-40%
Harnng Chart	-84%	-41%
Serm Ngam	-69%	-48%
Ko Kha	(+91%)	-40%
Mae Tha	-16%	+23%
Sobprab	-24%	-28%
Thern	-55%	-34%
Mae Prik	(+163%)	-63%
Total Province	-44%	-28%
Total, excluding Ngao & Sobprab	-41%	-20%

Source: Table

\* (-) decrease; (+) increase

( ) 1982 data not considered reliable

TABLE 19

Major Causes of Morbidity,  
Ngao and Sobprab Districts, 1984

Cause	Ngao (a)		Sobprab (b)	
	Number	Percent	Number	Percent
Diarrhea, dysentery	777	43.6	482	41.8
Eye disease (red eye, etc)	316	17.8	179	15.5
Undefined fever	205	11.5	195	16.9
Influenza, pneumonia	180	10.1	124	10.8
Measles	83	4.7	32	2.8
Food poisoning	33	1.9	78	6.8
Venereal disease	70	3.9	20	1.7
Other infections	105	5.9	38	3.3
Other	11	0.6	4	0.4
Total	1,780	100.0	1,152	100.0

Sources: Ngao District hospital records; Sobprab District health office.

(a) Hospital outpatient consultations.

(b) Rural health center consultations.

APPENDIX A

SUMMARY REPORT: MEALS FOR MILLIONS/FREEDOM FROM HUNGER FOUNDATION, THAILAND

Applied Nutrition Program

A. Project Description

<u>Goals/Purposes</u>	<u>Strategies</u>	<u>Activities</u>	<u>Inputs</u>
- improve nutrition status in rural Thailand by 25% reduction in malnutrition among 0-5 children	- activate and coordinate government service systems (health, agriculture, CD, education)	- maintain high-level support	- 7 national staff professionals
- improve quality of foods consumed	- reinforce training and supervision of health workers	- training of political officials, field workers and villagers	- initial animal, seeds, etc. with later inputs financed by village revolving funds
- organize a coordinated applied nutrition effort, emphasizing nutrition education, nutrition surveillance, and community development	- participatory approach to encourage community response	- promotion of CD activities - sensitization to nutrition at all levels	- \$605,000 for 3 years \$450,000 from MFW; and \$146,000 from ETO

B. Results

<u>Planned - Outputs - Actual</u>		<u>Planned - Impact - Actual</u>	
- unspecified CD activities in unspecified amounts	- impressive small animal introduction, feed cabinets, etc., though not targeted to malnourished or at-risk	- 25% reduction in malnutrition	- pre-existing downward trend in malnutrition makes initial goals inappropriate
- extensive training plan	- training activities exceeded targets		- too early to find impact on nutrition status, but promising intermediate outcomes may affect impact
- establishment of multi-sectoral nutrition coordination	- government departments working together far more effectively		

C. Management

<u>Planning</u>	<u>Administration/Staff</u>	<u>Relations</u>	<u>Information Systems</u>
- good initial data collection, but failed to analyze adequately for specific nutrient deficits and causes of malnutrition, thus making design too general and links to improved nutrition vague	- excellent national staff with minimal intermittent expatriate presence, high energy performance risks burnout	- excellent integration with national MDPH, not a FVO project but a joint effort	- activity reporting above average, but little results reporting and not much analysis
- strong Headquarters' input made field staff too concerned about activity targets, reducing field analysis of links to results and mid-course modification of activities	- staff need help in identifying technical assistance needs and FVO should improve response when needs are expressed	- adequate relation with AID mission, which does little monitoring	- FVO needs help with identification of data needs, presentation and analysis of data, and design of more useful evaluation system

**D. Institutional Development**

**Training**

- training constitutes political leaders, government field staffs, and villagers to nutrition concerns and institutionalize common focus and language
- training trainers to teach nutrition surveillance and survey skills strengthens MHW performance and capacity to continue training
- training trainers to assist villagers in agriculture and animal raising institutionalizes capacity to provide technical help

**Participation**

- co-workers are trained to use more participatory techniques than formerly
- enlightened directive approach accustoms villagers to influencing, though not controlling, decisions
- revolving funds encourage participation and institutionalize self-sustaining provision of seeds and animals

**Sustainability**

- modest, affordable inputs encourage EVO and private continuation of them
- close integration with government systems encourages permanent adoption of new approaches and techniques
- acting as catalyst to improved coordination will institutionalize some improvement in multi-sectoral cooperation
- villagers assisted in developing permanent organization and skills

**Replicability**

- entire project replicable, though results will be less impressive in more difficult contexts
- new Provincial Medical Officer plans to extend Project Model to other districts

**E. Special Issues**

**Constraints**

- high turnover and transfer of government staff limits effectiveness
- chamber of political officials and senior government officers can terminate accomplishments
- MHW willingness to replace FVO financing not yet clear

**Benefit Distribution**

- no assurance yet that increments in nutrient output will pass to those most in need
- production interventions rarely involve the poorest villagers
- failure to disaggregate data blurs focus on the most needy

**Data and Analysis**

- overemphasis on activity targets and neglect of intermediate impact measurement
- not enough disaggregation; frequency distributions, mapping, and profiling
- little attempt to quantify nutrient deficits or importance of causal factors

**Innovation/Technology Transfer**

- suitable food cabinets, water filters, and latrines have been introduced
- simple revolving funds are being administered effectively
- dissemination of simple animal raising, fish production, and bee-keeping techniques

**F. Conclusions**

**Strengths**

- an effective, thorough directive, participatory process
- integration with existing government services
- competent, dedicated, all Thai staff
- effective incorporation of nutrition into rural development
- catalyst approach yields favorable benefit cost ratio

**Weaknesses**

- poor causal analysis
- inadequate disaggregation of data with resulting blurred focus and limited targeting
- necessary technical assistance not identified or delivered effectively
- little channelling of incremental nutrient output to those most at risk

**Recommendations**

- improve technical assistance to national staff
- strengthen data presentation and analysis
- compare alternative nutrient sources for effectiveness in improving nutrition
- consider relative importance of causes in selection of activities
- target more precisely to villages and families
- explore influence of low birth weights and program accordingly

**Lessons Learned**

- nutrition can be integrated into rural development at modest cost and with significant results
- integration of nutrition into FVC benefits both nutrition and health
- outside catalyst can improve multi-sectoral coordination dramatically, if supported by the political levels
- flexible approach to project targets is essential in community-oriented project, since specific activities cannot easily be predicted

APPENDIX B

PARTIAL LIST OF PERSONS INTERVIEWED

Meals for Millions/Freedom From Hunger Foundation

Mr. Richard A. Redder	Vice President for Program and Acting Chief Executive
Mr. John Seo	Regional Director, Asia/South Pacific
Ms. Kathleen Stack	Director of Planning and Evaluation
Mr. Philip T. von Mehren	Program Associate, Asia/South Pacific
Dr. Walter Bray	Director of Technology

Meals for Millions/Thailand

Mrs. Naiyana Khomson	Program Manager
Mr. Chatri Prachaphipat	Community Development Specialist
Mr. Sa-Nga Damapongse	Senior Nutritionist
Ms. Amara Srisongkram	Junior Nutritionist, Sobprab District
Ms. Pratoom Oonping	Junior Nutritionist, Ngao District
Ms. Nuttakarn Wongchaya	Junior Nutritionist, Ngao District
Mr. Suwate Bhothisart	Community Development Assistant
Ms. Ratanaporn Kanthachompoo	Secretary/Typist
Ms. Anong Yingseree	Accountant

Lampang Province Officials

Dr. Choowangse Chayabutr	Governor, Lampang Province
Mr. Somsak Sriwattana	Vice Governor
Dr. Jamroon Meekhanon	Provincial Health Chief (Incoming) (MFM/Thailand Field Director)
Dr. Boonsom Pholdee	Provincial Health Chief (Outgoing)
Mr. Weerawongse Komolmana	Provincial Livestock Chief
Mr. Singhthong Boonyong	Provincial Agriculture Chief
Mr. Luan Kanthachompu	Provincial Fishery Chief
Mr. Surin Suthachai	Provincial Primary Education Chief

Sobprab District

Lt. Somboon Soychue	District Chief
Mr. Suthin Pinkrue	District Health Officer
Mrs. Malai Wang Nai	Assistant Health Officer (Midwife)
Ms. Kamoltip Nondphitak	Community Development Officer
Mr. Niwat Papobboon	Assistant Agriculture Officer
Dr. Prathan Lertmeemongkolchai	Director, District Hospital
Ms. Supamas Nipakasem	Health Promotion Nurse Supervisor
Ms. La-lad Surilawongse	Sub-district Nurse Supervisor
Mrs. Sukallaya Klodthong	Health Center Worker, Mae Kua
Mr. Sanguan	Elementary School Principal, Ban Thong
Mr. Virat Moonpun	Village Health Volunteer, Nam Lhong
Mr. Income Moonpung	Village Chief, Nam Lhong
Mrs. Boonyuen	Village Committee Member
Mr. Boonsong	Village Health Volunteer
Mrs. Jankum Chara	Wife of Village Chief
Mr. In Tajai	Village Chief, Wang Yaow
Mr. Sour Kaew Kantiya	Vice Chief, Wang Yaow

PARTIAL LIST OF PERSONS INTERVIEWED (con't.)

Ngao District

Col. Boonchai Ekhadit	District Chief
Mrs. Somsri Thananun	Health Center Worker, Ban Huad
Mr. Uthai Bumpen	Agriculture Extension Worker, Ban Huad
Mr. Chalor Yontchareonlum	Assistant District Livestock Officer
Mr. Pairat Nilakun	Community Development Worker, Ban Huad
Mr. Hol Mamee	Sub-district Chief, Ban Huad
Mr. Temsakdi Panomsana	Key Village Chief, Yao Hill Tribe
Mr. Laosan Saetern	Former Village Chief, Bor Si Liem (Yao)
Mrs. Kumpun Katsri	Villager, Nam Cham
Mrs. Buakum Ongprakit	Villager, Nam Cham
Mr. Sanam Orngit	Villager, Nam Cham
Mr. Veerasakdi Boonnag	Health Center Worker, Ban Haeng
Ms. Chamaiporn Chaturat	Health Promotion Nurse, Luang Nua
Mr. Prasith Kanthama	Sub-district Sanitarian
Mrs. Malee Kaosaeng	Village Health Volunteer, Thoong Sala
Mrs. Som Yodthanon	Mother of malnourished child, Thoong Sala
Mr. Chuey Sansook	Village Committee Member, Thoong Sala
Mrs. Kamsai Sansook	Village Women's Group, Thoong Sala
Mr. Ton Karon	Village Chief, Sob-erm
Mrs. Sook Punkwaen	Mother of malnourished child, Sob-erm

Chiang Mai Provincial Health Office

Mr. Stanley Zankel	Field Coordinator, Mae Chaem FP/MCH Health Development Project for Thai Minorities (Formerly with Lampang Health Development Project)
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Ministry of Public Health, Bangkok

Dr. Pirote Ningsanond	Director General of Health (MFM/Thailand Program Director)
Dr. Prasert Suyannus	Health Specialist
Dr. Paungthong Tantiwongse	Director, Nutrition Division

Mahidol University

Dr. Aree Valyasevi	Professor of Nutrition
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USAID/Thailand

Mr. Terrence P. Tiffany	Director, Health, Population and Nutrition
Mr. Narintr Tima	Office of Health, Population and Nutrition
Mrs. Lawan Ratanawang	Program Specialist, Human Resources and Training
Mr. David Oot	Former Director, Health, Population and Nutrition

APPENDIX C

ITINERARY OF THE EVALUATION

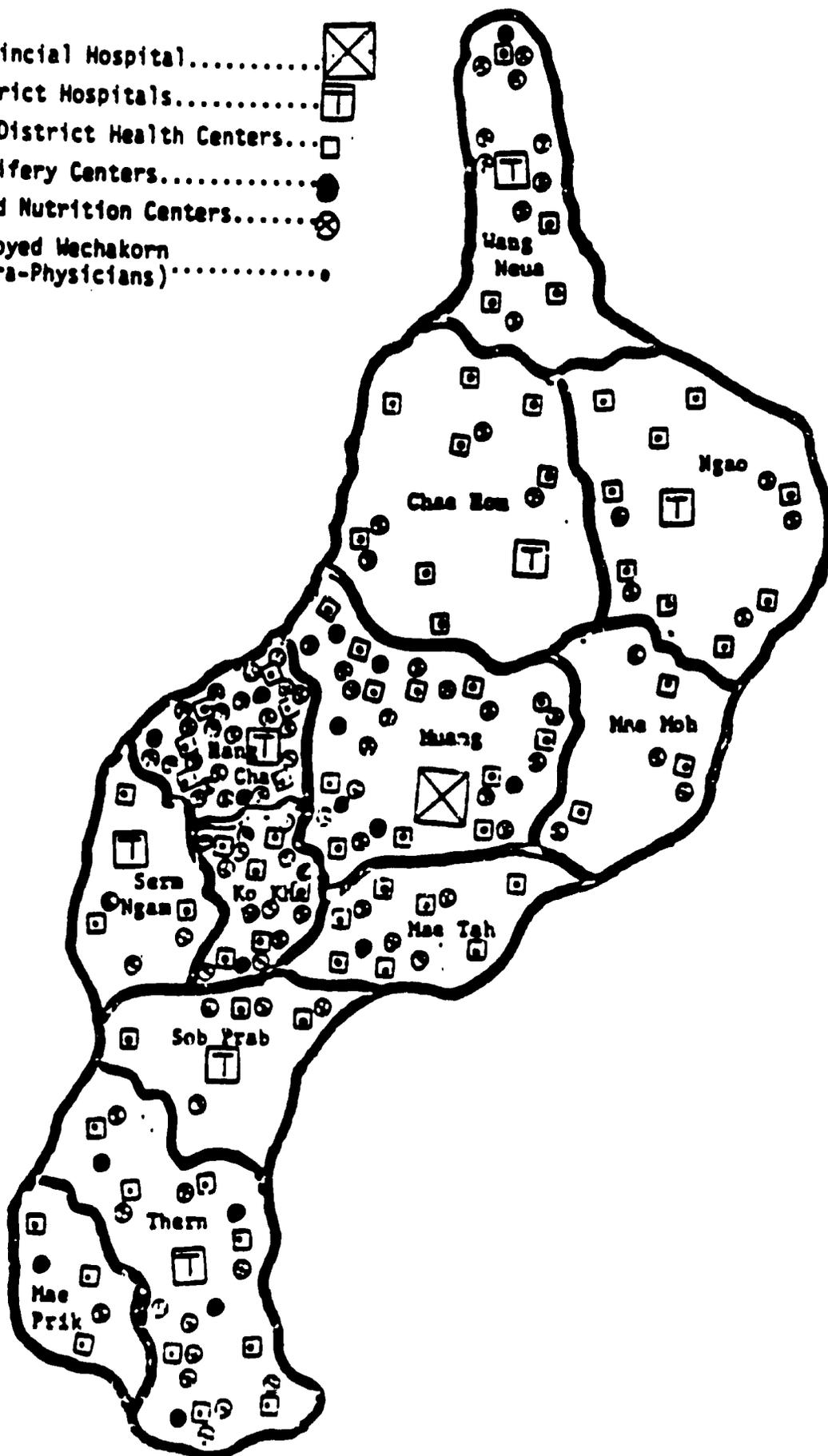
4 January 1985	Briefing of evaluation team at MFM/FFH home office in Davis, California
5 - 7 January	Travel to Lampang, Thailand
8 - 9 January	Lampang (MFM and Provincial Government Offices)
10 - 11 January	Visits to Sobprab and Ngao Districts*
12 - 13 January	Lampang (data analysis and writing)
14 - 15 January	Visits to Sobprab and Ngao Districts*
16 January	Lampang (MFM and Provincial Government Offices)
17 - 18 January	Bangkok (Debriefing with USAID, MOPH and MFM staff)
19 January	Travel to Washington, D.C.
21 - 25 January	Washington, D.C. (writing and debriefing with MSH and AID/FVA)

\*Includes visits to district government and health offices, and 15 villages.

APPENDIX D

MAP OF LAMPANG PROVINCE SHOWING DISTRIBUTION OF HEALTH SERVICE UNITS - 1979

- 1 Provincial Hospital..... [Symbol: Square with an 'X']
- 7 District Hospitals..... [Symbol: Square with a horizontal line]
- 71 Sub-District Health Centers... [Symbol: Square]
- 23 Midwifery Centers..... [Symbol: Circle]
- 93 Child Nutrition Centers..... [Symbol: Circle with a cross inside]
- 92 Deployed Wachakorn  
(Para-Physicians)..... [Symbol: Circle with a dot inside]



APPENDIX E  
PROJECT ORGANIZATION

