AIRGRAM

DEPARTMENT OF STATE

UNCLASSIFIED
CLASSIFICATION

PROJ. No. 4930179.2

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PO-AAO-620-81

DATE REC'D.

A.I.D.
Reference Center
Room 1656 NS

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DATE SENT
7-24-68

FROM - BANGKOK

SUBJECT - Project Paper (PRAP) - Protein Food Development
Non-Capital Project Paper

REFERENCE -

COUNTRY: Thailand PROJECT NO.: 493-11-540-179.2

SUBMISSION DATE:

PROJECT TITLE: Protein Food Development

U.S. OBLIGATION SPAN: FY 69 through FY 71

PHYSICAL IMPLEMENTATION SPAN: FY 69 through FY 72

GROSS LIFE OF PROJECT FINANCIAL REQUIREMENTS:

U.S. Dollars	$ 225,000
Cooperating Country	325,000
TOTAL	$ 550,000

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DRAFTED BY	OFFICE	PHONE NO.	DATE	APPROVED BY:
EJHurly:ac	AD/PH	215	7/16/68	Howard L. Parsons Minister Director

AID AND OTHER CLEARANCES
AD/P:SLIsaacs: (Drafts) Date 7/16/68 AD/P:JLDoggett: ____ Date ____
AD/P:VMBailey: ____ Date ____

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UNCLASSIFIED
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AID-5-39 (11-65) (Do not type below this line) PRINTED 6-66

PROP

PROTEIN FOOD DEVELOPMENT

493-11-540-179.2

I. Summary Description, Including Tabulation of Planned Inputs

This is a Three-year project, the purpose of which is to improve human nutrition in rural areas and develop a family of inexpensive high protein food supplements for weanlings and preschool children. Protein malnutrition as well as vitamin deficiency are major health problems in Thailand, especially in the Northeast.

This project will have three phases. They are: 1) research and develop a family of inexpensive high protein food supplements from local foods with emphasis on marine fish and high protein vegetables, 2) test these products in the field for suitability and acceptability and in the laboratory for human biological value and, 3) provide initial stimulus for local commercial production, promotion and marketing of acceptable products.

Summary of Proposed Costs

FY 69		
Short-term Consultants		$ 9,000
Participant Training		24,500
Commodities		67,000
Contract Services (Laboratory)		9,500
	Total	$ 110,000
FY 70		
Short-term Consultants		$ 10,000
Participant Training		35,000
Commodities		30,000
	Total	$ 75,000
FY 71		
Short-term Consultants		$ 10,000
Participant Training		30,000
	Total	$ 40,000
TOTAL COST - LIFE OF PROJECT		$ 225,000

II. Setting and Environment

Although Thailand is a major rice producer and has an overall favorable food supply, large areas of the country, particularly in the Northeast, are deficient in quality foods--particularly protein. As in other developing countries, the most vulnerable group is the young child between one and four years. In many Northeastern and Northern villages 40-50% of the weanlings and preschool children have some degree of protein-caloric malnutrition; vitamin A and B deficiencies and nutritional anemia are all too common. Often the diet of these children is little more than highly polished rice and "something" for flavor and variety with little attention to nutrient value. Eighty-four percent of their total calories are derived from rice. Protein malnutrition causes impaired physical and mental growth in young children and limits the productivity and drive of the adults.

As in other countries, many interlocking factors contribute to malnutrition in these children, including such factors as low income, over-dependency on rice, poor education of mothers, high birth rates, repeated infections and, in many areas, archaic customs, mores, beliefs and behavior. The problem of protein malnutrition is therefore intimately meshed with all other factors that characterize and influence poverty and backwardness. Some of these associated factors are being attacked by other USOM programs, and progress in general economic development will undoubtedly help to improve nutrition in young children. Recent findings from Mexico and elsewhere seem to establish, however, that protracted protein-caloric malnutrition in early childhood can, and often does, cause irreversible impairment to learning in later life. If this is so, and it seems to be, then early correction of protein-caloric malnutrition is essential to the intellectual growth of the future generation.

Several agencies are helping to improve nutrition in the Northeast. The main efforts have been by UNICEF and FAO, with participation from the U.S. Peace Corps. Most of this assistance has been through education programs and field demonstration areas. USOM, too, has supported a variety of activities including such measures as nutrition workshops for health workers, participant training in U.S. and 3rd countries and cross-training of education workers in the concepts of nutrition. Considerable effort has been made to strengthen the health infrastructure in ARD areas, with particular emphasis on programs of maternal and child health. The U.S. Department of Defense and the United States National Institute of Health have given substantial assistance in the development of field rations for Thai troops, in conducting nutrition surveys and in clinical and field research on selected problems of nutrition and related fields.

Progress to date, however, has been slow. The RTG sponsored a First National Seminar on Food and Nutrition in 1967 which identified protein

malnutrition in weanlings as the most serious nutrition problem in rural Thailand. In many areas, cheap protein is not available in a form suitable for infants. The RTG has placed high priority on developing inexpensive protein foods for weanlings from available food sources and has requested USOM and FAO to jointly assist them with this problem.

III. Strategy

This project responds to AID's overall efforts to improve the world's food supply and to USOM/Thailand's specific goal of improving human development by the promotion of better health and nutrition in the nation's children and the reduction of birth rates. Geographic focus is on the poorer areas of the country, particularly in the Northeast and Northern Provinces.

The need for increased protein in the diet of preschool children and weanlings is already established and has been described above. Increased protein intake is possible through the use of protein rich supplementary foods. In order to minimize cost, to have wide acceptability by the people and to permit effective commercial promotion, these supplements should be produced from local food sources. The factors that will determine the suitability of a particular food source are:

1. The protein content and amino acid composition of the food source or its derivatives. Other linked benefits such as vitamin, iron and iodine content may be considered but, for the target population (preschool children and weanlings) these are secondary although desirable factors; freedom from toxic substances, high biological value of the protein are, of course, essential.

2. Present level of production in country and opportunity for expansion of production. Consideration may be given here to linked benefits that would improve the earning power of people in economically distressed areas. Particular stress will be given to suitability of processing by small local plants or preferably by village or family-operated plants.

3. Low cost both for crude source and finished products with a feasible profit margin that will provide incentive for small private or cooperative investment. Some products may also evolve that could interest the larger food processing companies, both local and foreign. These may be suitable for country-wide promotion, perhaps with principle markets only in the more affluent urban areas at first, but with eventual impact on rural populations. The value of such prestigious baby foods in changing feeding habits of populations is well known and the project will not neglect such possibilities.

4. Product acceptability (mainly, in the case of weanlings by the mothers), hygienic keeping quality and suitability of packaging. It is recognized, too, that the form of finished products should be diversified in order to provide a reasonably wide range of choice by the consumer and to attract various interests of the food industry.

5. Effective utilization of by products. This factor is intimately linked with commercial costs and, as with mung bean, offers offshoots for established food processing plants.

Preliminary analyses indicate the in-country food sources most likely to meet these criteria are (in order of apparent potential):

1. Marine Fish
2. High Protein legumes, particularly mung and soyabeans.

Thailand's annual catch of marine fish has increased rapidly in recent years and has advanced from only 250,000 tons in 1960 to nearly 600,000 tons in 1967. This increase has been steady each year and does not reflect short term annual fluctuation. With improved fishing methods, annual catch can be doubled. To supplement 1.3 Gms. of protein per kilogram body weight per day (the estimated deficit) would require only 2.1 Gms. per kg. body weight/day of dried fish in contrast to 3.7 Gms. for soyabean and 6.2 Gms. for mung bean. The estimated number of preschool children of low income group (family income less than 3,000 baht annually) in the North and Northeast is 1.6 million: roughly 0.5 million in the North, and 1.1 million in the Northeast. The protein necessary to offset the deficit for 1.6 million children could be supplied from only 26,500 tons of fresh marine fish or from 16,000 tons of dried fish. This represents less than 5% of the present annual marine fish catch and considerably less than the tonnage increase each year. The marine fishing industry is limited mainly by markets and not by supply. Methods of proper preservation, processing, shipping and hygienic handling are, of course, prime limitations to increasing the use of marine fish. Marine fishing by nature is limited to coastal areas, particularly in the South, and economic benefits would, therefore, accrue to areas outside the most politically sensitive regions of the Northeast. The South, however, has suffered considerably from depressed prices of tin and rubber and needs increased income from other activities. Expansion of processed fish and fish products is a logical source for these increases.

The catch of fresh water fish is only about 100,000 tons per year and the wholesale price (7.8 baht per kilogram) is over twice the price of marine fish (3.4 baht per kilogram). This is mainly a question of supply and demand but the important point is that the poor of the North and Northeast must pay twice as much for fish protein as compared with those living in the South and in coastal areas. The distribution of protein malnutrition in the Northeast correlates roughly with the availability and cost of fish protein. In the Northern villages considerably more meat (and less fish) is eaten but the daily per capita protein intake in rural villages of the North and Northeast is about the same: approximately 55 Gms. of total protein/day of which only about 30% is of animal origin. The preschool child's

share is approximated at about 0.9 Gms. per kilgram body weight per day as contrasted to a recommended desirable level of 2.2 Gms. per kilogram for this age group. As would be expected, there is essentially no growth in Northeast village children between 18 to 24 months. It is recognized that concurrent efforts for promotion of fresh water fish ponds in the Northeast and North by RTG efforts in agriculture and fisheries could compliment the help expected from this project.

Soyabean is a common protein food source in other countries and many products suitable for child feeding can be derived from it. To meet the total protein deficit of the 1.6 million target population, approximately 28,000 tons/year would be needed. Total soyabean production in the country is only about 20,000 tons/year. It is obvious, therefore, that soyabean cannot be a prime source of protein unless production is increased dramatically. In general we don't believe more than 10% of the Nation's annual crop of any food source could be considered available for infant and child feeding in the North and Northeast.

Mung bean is somewhat more favorable as a food source for protein. About 125,000 tons are grown annually. About 47,000 tons would be needed to correct the protein deficit which represents one-third of the total national crop. Mung protein could be recovered economically from the waste wash liquid in the manufacture of bean noodles. The picture for peanuts is much the same in regard to production (131,000 tons per year), but peanut protein is considerably more expensive than soya or mung beans. The incidence of aflatoxin contamination in peanut products has been shown to be high in Thailand.

It is apparent then that fish and mung protein must play a paramount role in correcting the protein deficit of the target population in the Northeast as the cheapest, most available protein source. Meat, poultry and eggs together provide about 6% of the average daily protein intake in the Northeast, and in children it may be less. The influence of milk and dairy products is negligible.

The proper development and execution of this project will require a good deal of coordination between different agencies but particularly, as concerning the Thais, between the Division of Nutrition of the Ministry of Public Health, the Preserved Food Organization (pilot plant), the Applied Scientific Research Corporation, and SEATO. Foreign assistance will also come from several sources directly or indirectly. These include the United Nations Development Plan (UNDP), FAO, as well as AID and U.S. input to SEATO. We see USOM's role as essentially catalytic and stimulatory. Our aim is essentially to get a small but significant program started to rally both the Thais and the United Nations Agencies who have expressed an interest in this field. We rejected the original plan suggested by a U.S. survey team which recommended a U.S. university contract because it appeared to focus on U.S. based food technology without giving sufficient consideration to

the ecology and the long range outlook for implementation in Thailand. We believe, too, that UNDP and FAO should take the prime role in this field through its major input and support to the Applied Scientific Research Corporation and its affiliation with other agencies, including the Division of Nutrition of the Ministry of Public Health, the Pilot Plant of the Preserved Food Organization and the National Research Council.

There have been problems concerning the pilot plant of the PFO which has been hamstrung by its subordinated position within the army-operated Preserved Food Organization.

Recently, the RTG established a Food Industry Research and Development Center which combines the Food Technology Section of the Biological Science Division of the Department of Science of the Ministry of Industry with the PFO pilot plant. The activities of this new center will be coordinated by an Executive Board consisting of representatives from the Ministry of Agriculture, the Ministry of Industry, the Applied Scientific Research Corporation and Kasetsart University. Mr. Amara, Thailand's only fully qualified food technologist and present scientific chief of the PFO, will be in charge of the new Food Industry Research and Development Center. It is expected that a National Council for Nutrition will be formed by September of 1968 which will probably be headed by Dr. Amorn, the Chief of the Division of Nutrition of the Ministry of Health. Although the Ministry of Health is not represented on the Executive Board of the Food Industry Research and Development Center, its influence will be exerted through the National Council for Nutrition. On the informal level, Mr. Amara, the Food Technologist Director of the new Center, and Dr. Amorn of the Ministry of Health Division of Nutrition, have very friendly and cooperative relationships. In this maze of participating national agencies, we have opted to place our project in support of the MCH Division of Nutrition and will rely mainly on Dr. Amorn to coordinate it with the other interests. The relationship with the new Food Industry Research and Development Center on the other hand should be vital to the effective commercial promotion of suitable products.

USOM believes, therefore, that our inputs should be limited to selected commodities, participant training and short term consultation, leaving the major role of incountry technical assistance to UNDP and FAO. FAO is already giving part time technical advice in food technology and will provide at least one full time consultant by the end of 1968. The personnel of the Applied Scientific Research Corporation have also pledged their continued support. In cooperation with the pilot plant of the PFO, they have developed several products from soyabean and mung bean and have started some preliminary work to improve preservation of dried fish.

In view of all the factors described above, we believe this is the best way to initiate this project. The recent limitations placed on the mission by

cuts in U.S. incountry personnel ceilings weigh heavily against a U.S. university contract for technical assistance at this time. The project will be closely followed by USOM's Office of Public Health and the question of adequate technical and managerial guidance under the consultants of the U.N. agencies will be periodically evaluated.

IV. Planned Targets, Results and Outputs

By the end of the first year of the project, a number of prototype food supplements will be researched and developed. Limited production of these supplements will be made for field testing of these and additional food supplements during the second year for acceptability and growth promotion. By the start of the third year, enough information should be available on a number of products to start to introduce them to the food processing industry for commercialization. The last year of the project will be concerned with a continuation of the activities of the first two years but with strong emphasis on stimulating the commercial interests, creating a multidisciplinary group of workers in food technology, nutrition and related fields, and organizing sponsored feeding programs for the preschool and s school child after the termination of the project. Conventional development of applied nutrition will be introduced simultaneously whenever and wherever possible.

V. Course of Action

Development of high protein food products from marine fish, mung beans and other high protein food sources will commence immediately with close collaboration between the preserved Food Organization, experts from FAO, the Applied Scientific Research Corporation and the Nutrition Division. Various combinations using these two varieties of food as bases will be prepared with or without the addition of other ingredients.

The finished products will be analyzed for their protein and amino-acid composition, and the biological values will also be determined.

Thailand has limited expertise and facilities for conducting biochemical analyses for protein and amino acids and for performing animal studies for biological values. It will be necessary to negotiate a contract service in FY 69 with a U.S. University Center having special interest in the field of food science. This contract will be negotiated for a two-year period for biochemical analyses and animal studies performed in U.S. laboratories only.

Acceptable products will undergo experimental cookery and preparation in palatable forms.

The products will then undergo field trials to determine their acceptability and effect on growth. Subjects for the field trials will be preschool chil-

dren between the ages of one and five from low income families (less than $3,000 per annum). Acceptability tests will also be made on the mothers of these children.

Locations for the field trials are as follows:

Prae	-	5 villages
Chiang Mai	-	5 villages
Roi Et	-	5 villages
Ubol	-	10 villages

Approximately 100 children will be selected in each village bringing the total number of children involved to 2,500. One or more suitable villages in each province will be selected as control villages. Approximately 100 preschool children in each of these villages will be selected as control subjects.

Feeding and growth measurements will be accomplished in each village by establishing a simple village day care center. Villagers will be invited to participate in the organization and running of the center. Two trained workers located at each center will be under the guidance and control of the existing district health center. Assistance will also be provided by government midwives, nutrition aides and other categories of volunteers. The Provincial Health Officer will be responsible for all day care centers in his Province. Participation in and contributions to the program will be on a voluntary basis and mothers will take turns tending the children.

Surveys of usual weaning foods will be made with the intention of exploring the possibility of fortifying foods already acceptable to villagers.

A survey of the food industry will be made and a national seminar will be held for the purpose of stressing the importance of the role industry can play in this program. Guidance will be given to the food industries to help them assume a leading role in food technology research and commercialization of high protein food products. The ultimate target population in the North and Northeast is approximately 1.6 million preschool children.

Concurrent development of sponsored feeding programs will be made using products developed by this project.

General development of the selected villages will be done simultaneously. Emphasis will be placed on nutrition education and environmental sanitation. The aim is to assist the villagers in carrying on the work by themselves on completion of the project.

Table 1
Page 1 of 2
COUNTRY: Thailand

NONCAPITAL PROJECT FUNDING (OBLIGATIONS IN $000)

Project Title: Protein Food Development

PROP DATE
Original
Rev. No.
Project No. 493-11-540-179.2

Fiscal Year	AP	L/G	TOTAL	CONT 1/	Personnel Serv. AID	Personnel Serv. PASA	Personnel Serv. CONT	Participants U.S. Agencies	Participants CONT	Commodities Dir. U.S. Ag	Commodities CONT	Other Costs Dir. & U.S. Ag	Other Costs CONT
Prior through Act. FY__													
Oper. FY 69	TC	G	$110				$9	$24.5		$67			$9.5
Budg. FY 70	TC	G	$75				$10	$35		$30			
B+1 FY 71	TC	G	$40				$10	$30					
B+3 FY __													
All Subs.													
Total Life			$225				$29	$89.5		$97			$9.5

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Table 1
Page 2 of 2

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Project No. 493-11-540-179.2

Fiscal Years	AID-Controlled Local Currency U. S. -	Country -owned	Other Cash Contribution Cooperating Country	Other Donor Funds ($ Equiv.)	Food for Freedom Commodities Metric Tons (000)	CCC Value & Freight ($000)	World Market Price ($000)
Prior through Act. FY__							
Oper. FY 69		$75	$50				
Budg. FY 70		$50	$50				
B+1 FY 71		$50	$50				
B+3 FY __							
All Subs.							
Total Life		$175	$150				

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BANGKOK

AID [illegible] 10-62

AGENCY FOR INTERNATIONAL DEVELOPMENT (A.I.D.)

A.I.D.
Reference Center
Room 1656 NS

PROJECT AUTHORIZATION

1. PROJECT NUMBER	3. COUNTRY	4. AUTHORIZATION NUMBER
[illegible] 179.2	THAILAND	[illegible]

2. PROJECT TITLE	5. AUTHORIZATION DATE
Protein Food Development	2/17/70
	6. PROP DATED
	[illegible]

7. LIFE OF PROJECT

a. Number of Years of Funding: 3

Starting FY 19[illegible] Terminal FY 19[illegible]

b. Estimated Duration of Physical Work After Last Year of Funding (in Months): [illegible]

FUNDING BY FISCAL YEAR (in U.S. $000 or $ equivalent)	DOLLARS		P.L. 480	LOCAL CURRENCY Exchange Rate: $1 = [illegible]			
				U.S. OWNED		HOST COUNTRY	
	GRANT	LOAN	CCC + FREIGHT	GRANT	LOAN	JOINTLY PROGRAMMED	OTHER
Prior through Actual FY 65	110					[illegible]	[illegible]
Operational FY 70	75					[illegible]	[illegible]
Budget FY 71	40					[illegible]	[illegible]
B + 1 FY							
B + 2 FY							
B + 3 FY							
All Subsequent FY's							
TOTAL	[illegible]						

8. DESCRIBE SPECIAL FUNDING CONDITIONS OR RECOMMENDATIONS FOR IMPLEMENTATION, AND LIST KINDS AND QUANTITIES OF AND P.L. 480 COMMODITIES.

This project receives modest inputs from [illegible] and [illegible] the Mission's role as a catalyst. Other participants include, [illegible] the UN, [illegible] Peace Corps, and private firms. AID/W also cooperates in a fish protein [illegible] pilot program and a UNICEF Title II food distribution program not covered [illegible] PROP. The variety of agencies and offices involved (both Thai and [illegible]) [illegible] minor problems of implementation. It is thus advisable to concentrate on [illegible] coordination to get maximum benefit from the project.

9. CONDITIONS OF APPROVAL OF PROJECT

[illegible] 1969 submission from the Mission requests $99,000 in FY 70, rather than [illegible] the rise accounted for by increased projections for commodities and consulting

(Use continuation sheet if necessary)

11. Approved in substance for the life of the project as described in the PROP, subject to the conditions cited in Block 10 above, and the availability of funds. Detailed planning with cooperating country and drafting of implementation documents is authorized.

This authorization is contingent upon timely completion of the self-help and other conditions listed in the PROP or attached thereto.

This authorization will be reviewed at such time as the objectives, scope and nature of the project and/or the magnitudes and scheduling of any inputs or outputs deviate so significantly from the project as originally authorized as to warrant submission of a new or revised PROP.

A.I.D. APPROVAL	CLEARANCES	DATE
/S/ CHB	[illegible]/SEA:JBlack [illegible]	[illegible]
SIGNATURE	[illegible]/SEA:[illegible]	
Dir AA/[illegible]: Charles H. [illegible] 2/17/70	[illegible]/[illegible]:JSh[illegible]	
TITLE DATE	A/CONT	