

SUMMARY PROGRESS STATEMENT
ONGOING PROJECTS

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PO-ADF-220-
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Project # 190-533

Project Title Agricultural Diversification and Trade

Contractor a) Asia - USDA-ERS (Philippines)

b) LA-North Carolina State University

I. Implementation Progress

<u>Outputs</u>	<u>Progress to Date & Relationship to Project Purpose and Goal</u>
1. Development of national and regional production-marketing analytical model for relevant crop and livestock enterprises.	1. Data collected and punched for 186 situations in various factor areas.
2. Preparation of data for base period analysis and for 1980 and 1984 forecasts	2. Data collection for three major crops completed. Nine additional crops under study. 11 volume series on regional agricultural production has been published.
3. Conduct validation runs of computer model with selected policy alternatives	3. Computer runs tested and debugged as needed. Forward-projections being developed under a variety of policy alternatives.
4. Expand analysis and policy testing	4. Additional related data being collected and incorporated into model.

II. Project on Schedule; Life-of-Project Budget Accurate?

- a. Project making planned progress. Budget allocations below original projections. Expenses effected by inflation.
- b. Additional time extension provided at no cost to allow completion of objectives in Latin America.

III. Significant Change(s) in Project Proposed?

Original objectives are still germane

IV. Role of TA Technical Office; Mandays required

Project direction by TA Technical Office requires 40 mandays per year.

Attachment: PAR dated 7/30/74

REPORT SUMMARY

PROJECT: Agricultural Diversification and Trade
PASA RA(AJ) 13-71

**PRINCIPAL INVESTIGATORS
AND CONTRACTOR:**

L. Jay Atkinson and David E. Kunkel
U.S. Department of Agriculture
Economic Research Service
Washington, D.C.

CONTRACT PERIOD: March 1, 1972, to March 31, 1975

**PERIOD COVERED BY
REPORT:** July 1, 1973, to June 30, 1974

**AID FUNDING OF
PROJECT: 1/** Prior to July 1, 1973
July 1, 1973, to June 30, 1974
Estimated expenditures,
July 1, 1974, to June 30, 1975

\$175,994

153,040

109,431

~~156,000~~

100

NARRATIVE SUMMARY:

Progress was made in developing a linear programming model covering the major crops and livestock products in seven regions for analyzing alternative production and market opportunities. A preliminary draft of the analytical framework has been completed and work on building the model itself is about 50 percent complete. Demand coefficients have been estimated from time series using a 10-equation econometric model. Additional analysis using cross sectional data is being made for those commodities not included in the time series analysis. As a basis for comparison with the programming model, econometric estimation of historical supply response is being made and is 75 percent completed. Also nearly completed is the analysis of prices and margins to provide input data for the programming model.

Studies of size of farm in relation to technology for both lowland and upland rice farms are completed and reports are being prepared. Also completed were two fertilizer studies--one of the fertilizer industry and its marketing and distribution systems and the other, a demand and supply response study using an econometric model.

Project reviews were held in Washington and Manila. Recommendations for utilizing more high-level technical consultants and for developing plans for integrating the project into the regular work of the Bureau of Agricultural Economics (BAECON), Philippine Department of Agriculture, are being implemented. Additional time beyond the March 1975 termination date is needed to complete the analyses and provide at least minimal training and experience for BAE staff. A reasonable time schedule for completion of the project is June 30, 1976.

1/ Includes USAID Mission costs covering housing and local travel paid out of Peso trust funds as well as dollar value of commodities received. FY 1975 also includes training.

Agricultural diversification and Trade - PAS. A(AJ)13-71

A. General Background

Project ADAM 1/ grew out of discussions between representatives of USAID and BAECON at a regional meeting on agricultural diversification and trade in Manila in 1971. At that time it was expected that rice yields would increase tremendously with adoption of new high yielding varieties and improved technology. It was concluded 2/ that agricultural diversification was necessary in order to find alternative uses for land resources devoted to food grain production as self-sufficiency goals were met and exceeded, to increase farm income and to provide additional foreign exchange.

It was pointed out that to address the problem effectively it would be necessary to (1) gain an understanding of the internal competitive relationships among significant commodities and to determine diversification potentials; and (2) evaluate the potential demand for selected commodities to compete in national, regional, or world markets. Information would be required on farm income, changes in demand, interregional competition and "...Far more specific data on farm level alternatives than is presently available..." including how likely farm practices will change the nature of the farm production response.

The project was initiated in February 1972 after approval by the National Science Development Board (NSDB). ERS participation was delayed briefly but began on a TDY basis in May 1972.

The Davao Planning Conference in December, 1972, recognized that the expected rate of increase in rice production was not being realized and that a reassessment of the new technology was needed as a part of the study of production alternatives.

1/ Agricultural Diversification and Markets.

2/ Technical paper, Agricultural Diversification and Trade, 2/24/74.

Four work phases of Project ADAM were originally programmed for a period of 3 years. Phases I and II were to have been completed during the first year, but the unexpected voluminous amount of literature on agricultural research encountered by the project staff delayed completion of these phases. The second project year had been intended for Phase III alone, but due to the delays in the earlier phases, some difficulties encountered in the activities of Phase III itself, and the need to provide additional experience and training for the staff, additional time will be needed. Approval has been granted for extension of the project by the Philippine agencies involved. It was agreed at the time of the project review in Manila that approval for continued UN-IP participation will be recommended.

B. Objectives

1. To develop the economic data and analysis needed to identify realistic agricultural production and market opportunities and alternatives at the farm, regional, and national levels; and,
2. To obtain an integrated picture of agriculture within which various policy goals can be analyzed. These can be broadly stated as:
 - a. Achieve self-sufficiency in agricultural products at least in regard to staple commodities such as rice and corn;
 - b. Increase national income, raise income of rural people and increase employment in agriculture; and
 - c. Improve foreign exchange position by reducing agricultural imports and increasing agricultural exports.
- ~~3. To develop in the Philippines the capacity for continuous analysis and re-evaluation of these opportunities and alternatives as production and market conditions change.~~

C. Continued Relevance of Objectives

Relevance of objectives was carefully considered at the time of the review of the project in Manila and both Philippine and U.S. participants agreed that original objectives still hold. Statements of objectives in Philippine reports differ somewhat in wording from the statement in section B above but do not appear to differ significantly in meaning.

D. Accomplishments to Date

1. Prior to current project year.

In general, the project started out slower than was originally planned. Because there were several organizations involved on both the U.S. and Government of Philippine side, coordination and agreement on implementing the project required going through channels on each side as well as obtaining the necessary clearances for the resident U.S. technician. Thus, it was 9 months after the Philippine side and 6 months after ERS had obtained final approval that the U.S. resident technician arrived and the Davao conference was held. During this time the Philippine group had made the literature search and reviewed the most relevant works. The U.S. personnel during this time had some TDY time in the Philippines planning and coordinating the project, and obtaining final approval of arrangements. Computer analysis of the farm level data on fertilizer response from the 1969 Integrated Agricultural Survey (IAS) was done during this time in Washington and a draft write-up prepared.

Following the Davao conference a number of consultations were held by the senior staff of ADAM from the Bureau of Agricultural Economics (BAEcon), University of Philippines Los Banos (UPLB) and USDA to determine what sub-projects would be undertaken by each.

At the same time, data processing facilities were assessed since those available at the beginning of the project were inadequate. Arrangements were completed for use of University of Philippines Diliman computer shortly before the current project year.

2. Current Project Year - July 1973 through June 1974.

The second year was a transition to the analytical phase, and demanded, in addition to high-quality staff, a continuity of such staff in order to at least ensure the smooth flow of the project activities. Staff departures during the second year, and especially at the beginning of the calendar year, upset the timetable and delayed some phases of Project ADAM activities. However, substantial progress was made in development of the programming model for examining production alternatives, collecting and organizing input data, and completion of several sub-projects that provided background and experience for staff.

a. Development of programming model

Production and marketing alternatives are being examined in the programming model covering 13 crops and 4 livestock products in 7 regions for the land types where these commodities are produced. The 3-year period--1970-72 crop year--is being used as a base, and projections to 1980 are being made under alternative demand-supply conditions with varying constraints representing policies adopted. Domestic demand functions are included for various products, and exports and imports are permitted.

The development of a preliminary analytical framework has been completed and building of the model is about 50

percent complete. Work is nearly finished on developing the major resources constraint by region. Input coefficients have been developed for rice for most regions and work started on the remaining enterprises. The demand analysis is about 50 percent completed. Prices to be used have been compiled.

b. Evaluation of potential demand.

(1) A draft has been completed employing a 10-equation econometric model fitted by three-stage least squares using data for the years 1955-56 through 1968-69. The model will be used for short-term forecasting and in connection with appraisal of results from the programming model.

(2) Demand for Agricultural Products (joint with Manila and Bicol River Basin groups). This involves estimation of demand functions using consumption survey data to develop income and price elasticities for most products used in the programming model. Analysis about half completed; estimates completed for Bicol and Manila.

c. Supply Response Analysis.

Estimation was made of historical supply response functions for major crops, by relating area and yield of these crops with their own prices, prices of competing crops, factor prices, and others using a distributed lag model. Analysis is underway and completion is expected in July.

d. Prices and Margins

Trends and seasonal variation in prices at the farm, wholesale, and retail levels by region, and the analysis of price margins and their relationships with prices were completed.

e. Related Studies

The development of a series of studies of current problems under the general ADAM framework has contributed to the capacity for economic analysis in the Philippines. Several of these have provided direct inputs or background for the programming model. These include:

- (1) A national Research Council assisted project on the size of farm in relation to technology that can be operated using family labor has been integrated into Project ADAM's research. The analysis for the lowland irrigated rice farm has been completed and a preliminary report published. The analysis for upland farm conditions has been set up and the results are now being analyzed. Micro farm linear programming studies of sugarcane and rice with other crops have been made and results presented as part of a master's thesis described below.
- (2) A working paper on the status of the fertilizer industry and its marketing and distribution system in the Philippines has been prepared under the title Fertilizer Supply Situation and Marketing Systems in the Philippines as Project ADAM's

Working Paper No. 4. This paper covers fertilizer capacity of the Philippines, marketing aspects, and the role of fertilizer as an input for the progressive agricultural economy.

Work has been completed on a more intensive analysis on fertilizer supply and demand results presented in a Master's thesis titled "The Demand for Fertilizer in the Philippines." Use was made of an econometric model of fertilizer demand and supply response to fertilizer prices to forecast future demand for fertilizer and the response of rice, corn, and sugarcane. The thesis also compared experimental fertilizer yield response with that obtained by farmers. Additionally, linear programming models of a representative farm situation for (a) rice and other crops and (b) sugarcane were used to look at optimal fertilizer use and level of technology.

- (3) A paper similar to the fertilizer paper has been drafted for the agricultural machinery industry and is to be revised as a Working Paper.
- (4) A rice marketing study of the Bicol Region has been started and will be related to the Bicol River Basin Development Program. This is a research area presently being worked by on a Project ADAM participant from the East-West Center.
- (5) Analyses of the agricultural patterns were completed for eleven regions including such factors as climate, land, soil, crops, farm animals, farm facilities, income, expenditure, prices, and population. This analysis

is now being prepared for publication and will be released as Project ADAM's Working Paper No. 5.

- (6) Trend analysis was made on wages paid to agricultural laborers by crop and operation (where available), with meal and without meal. This serves also as a preliminary analysis for the estimation of supply response functions.
- (7) The analysis of trends in area, production, and yield of different crops on the national and regional levels has been completed and report is being drafted. Among other things, this includes a study of the relative contribution of the various regions, the competition in hectarage, and projections of crop area.

E. Dissemination and Utilization of Research Results

Research results are issued in limited number by BAEcon in a series of working papers or as unnumber papers. Issuances during 1973-74 are listed in Appendix A. Project Adam staff has participated in and presented papers to several professional meetings in the Philippines, including the National Congress for Agricultural Research sponsored by the Philippines Council for Agricultural Research and the NSDB Evaluation Seminar. Known uses of reports of information developed as a part of Project Adam are presented in Appendix B.

Linkages have been established with several academic or research institutions through consultants or staff assignments. These include: The University of the Philippines at Los Banos, where several project personnel or joint-staff members are stationed; the University of the Philippines School of Economics through a consultanting arrangement; and the National Research Council of the Philippines, also through a consultant. Less formal but meaningful linkages have been established with the International Rice

Research Institute and through graduate student programs with The Food Institute of the East-West Center and the University of Tennessee. Although these will be most useful in providing inputs and technical guidance during the early stages of the project, it is expected that, at later stages as more results are available from the project, these linkages will provide major channels for dissemination. Earlier expectations of establishing extensive and direct linkages with other LDC's have not materialized. However, Philippine staff members hope to establish a means for interchange of ideas through regional seminars on agricultural diversification.

F. Expenditures and Contractor Resources

Total expenditures on the project from all sources in FY 1974 are estimated to have been the equivalent of \$219,000. This included peso expenditures by Philippine agencies equivalent to \$66,000. Of this amount, almost 75 percent was for personal services, about 7 percent for travel, 5 percent for supplies and materials, and the remaining 13 percent for unspecified sundry expenses. The USAID Philippines mission provided about \$21,000 to cover housing costs for resident PASA personnel and local travel costs. About \$132,000 was ^{FY 73} provided under USAID/TAB PASA for salary and benefit costs for two professional economists and one secretary and travel and overhead costs for these employees.

Progress on the project was seriously hampered during the reporting period by turnover and inadequate number of top staff on the Philippines side. However, additional funds would not have solved this problem without an accompanying arrangement to increase the salaries of the staff that were, and still are, held at extremely low levels by Civil Service regulations. Plans for holding a workshop to provide for exchange of information on diversification and trade between Philippine researchers and those of other LDC countries were canceled primarily because of inadequate budgets. Likewise, plans for

consultants to assist in model development, delineation of agro-economic areas, and data development were not carried out because of budget restrictions.

There were no major changes in project management, facilities, or other arrangements during the year except for shifts made from time to time in staff assignments to try to partially adjust to departures of several key staff members. During the project review in Manila, it was recommended that the mix of professional inputs under the PASA be changed by substituting a series of consultants on temporary assignment for one of the professionals previously assigned on a fulltime basis. This recommendation has been implemented.

G. Work Plan and Budget Forecast

A work plan for FY 1975 and 1976 is outlined below, together with the expected time schedule. A proposed budget for the PASA is presented following the work plan statement. In addition to one fulltime resident economist, the proposal provides for a total of 235 man-days for consultants.

Several of the problems (noted in the preceding section) have slowed progress and the present development of the project is several months behind the originally planned schedule. However, the solution of the problem of developing suitable land classification information and the improvement in staffing has permitted a substantial increase in the rate of development in recent months. If the present staff can be maintained and no serious new problems arise, the proposed schedule outlined below appears attainable.

July

- Incorporate recommendations of the review panel.
- Further develop the paper on problems to be analyzed with the programming model, limitations of analysis and identification of problem areas related to the project objectives which may require different approaches.
- Discuss and develop the proposal by Leo Gonzales for thesis integration with the programming model.

August

- Provide a draft outline of the final report to W. A. Faught (ERS).
- Begin a 6-week TDY of a consultant or consultants that has had experience in developing and using programming analysis in less developed nations to review model plans; to evaluate input data; to advise on model manipulation for specified policy options; to assist and appraise uses and limitations of the model for general policy analysis; and review the work plan.
- Complete the demand analysis and derive separable demand functions.
- Complete specification and begin a review by knowledgeable persons of productivity levels by commodity, by season, by land class, and by type of enterprise where relevant for base period analysis.
- Associate required inputs to obtain levels of output specified.

September

- Provide TAB with an outline of the final report for review and approval.
- Complete estimation and collection of transfer costs and miscellaneous other data for the model.
- W. A. Faught (ERS-TDY) to discuss and review consultants recommendations. Plans should also be made at this time for subsequent visits of consultants.
- Luther Keller of University of Tennessee (TDY) to be involved with discussion of model direction and agreement on plans for integration of Leo Gonzales' dissertation work into the model.
- Bring in local consultants to help develop needed analysis for investment activities in the model.

October

- Integration of suggestions made by consultants for model and completion of model specification. Develop revised work plan if required.
- Begin deriving projections and develop other analysis needed for 1980 period as well as intermediate periods if required.

November

- Complete coding and punching of data for base period analysis and initiate debugging.
- Obtain trail runs for base period runs.
- Specifications of work on model while D. E. Kunkel is on home leave.
- Complete draft write-up of demand analysis and projections.
- Complete draft write-up of historical supply response analysis.

January

- Complete assembly of 1980 data, code and punch.
- Training begins for two or three ADAM personnel.

February

- D. E. Kunkel 10 days in Washington for consultation with USDA and TAB on progress of the project; return to Manila around February 15.
- Complete the analysis of base period runs.

March

- Begin trial runs for 1980 period of specified policy options in working paper "A Programming Model of Philippine Agriculture" and per recommendation of consultant.
- Mid-March consultant returns for up to 4 weeks to review program development and help in completing necessary runs.

April-May

- Complete analysis of computer results, make additional runs as required and begin write up. Keller TDY.

June

- Obtain services of a consultant to assess all work under Project ADAM and means of combining for simulation or other types of analysis in additional work areas.
- Develop plans for any additional analysis to be undertaken in FY '76.

- Complete draft write-up of results from programming model analysis to date.

July-August

Conference involving Philippine participants, consultants from USAID, and other interested parties to review results and develop recommendations for additional computer analysis in near future as well as longer run analyses needed.

October

Complete additional computer analysis suggested at conference.

December

Revised draft of report summarizing results of all research undertaken by all participants of project ADAM.

January 1 through June 30, 1976

Cooperate with Philippine colleagues in refining and modifying model and using it in analyses to appraise changing conditions or additional policy options; and to complete internalization process necessary to firmly establish use of approach in the Philippines. Report to AID incorporating major results from Project ADAM; appraisal of methodology; evaluation of institution-building achievements; and possible future utilization of approach in the Philippine and other less develop countries.

11 Fought
Bausman
PAGE 1 OF 2

ERS 64A 4-74 PASA BUDGET PLAN By Object Class	PARTICIPATING AGENCY SERVICE AGREEMENT WITH: U. S. DEPARTMENT OF AGRICULTURE PHILIPPINES BUDGET PLAN FOR FY 75	AMOUNT \$109,431	PASA CONTROL NO. RA(AG)13-71 4
		APPROPRIATION	PIGT NO.
		ALLOTMENT	

POSITION	CLASS GRADE	FC GRADE	RATE	MAN-DAYS	SALARY	DIFFERENTIAL	TOTAL	PERSONNEL BENEFITS	INT'L. TRAVEL	TRANSPORTATION OF THINGS	TOTAL
Agr. Econ. D. Kunkel		10/02	21,366	66	15,423	542	5,965	460	2/0	0	6,425
		10/02	21,366	79	17,878	649	7,527	551	0	0	8,078
		10/02	21,366	116	40,100	657	10,757	810	0	0	11,567
Agr. Econ. Sharples		15/05	32,031	14	2,098	0	2,098	146	2,110	0	4,354
		15/05	32,031	40	6,289	0	6,289	418	2,110	0	8,817
Agr. Econ. Keller			0/D	0	0	0	0	0	3,820	0	3,820
Agr. Econ. Fuchs		13/01	20,677	9	870	0	870	60	1,965	0	2,895
		13/01	20,677	18	1,826	0	1,826	121	0	0	1,947
Agr. Econ. Edwards		15/07	33,915	16	2,539	0	2,539	177	2,040	0	4,756
		15/07	33,915	5	832	0	832	55	0	0	887
Agr. Econ. Conslt.			125/D	20	2,500	0	2,500	0	1,925	0	4,425

SUB TOTAL 57,971

- 21 Domestic Travel
- 23 Rent, Comm., Util.
- 24 Print & Repro.
- 26 Supp. & Mat.
- 31 Equipment
- 25 Other
- Overhead

GRAND TOTAL

31

FASA BUDGET PLAN By Object Class	PARTICIPATING AGENCY SERVICE AGREEMENT WITH: U. S. DEPARTMENT OF AGRICULTURE PHILIPPINES BUDGET PLAN FOR FY 75	AMOUNT	\$109,431	PASA CONTROL NO.	RA(AG)13-71	PAGE 2 OF 2 PAGE
		APPROPRIATION		PIOT NO.		
		ALLOTMENT				

POSITION	CLASS GRADE	FC GRADE	RATE	MAN-DAYS	SALARY	DIFFERENTIAL	TOTAL	PERSONNEL BENEFITS	INT'L. TRAVEL	TRANSPORTATION OF THINGS	TOTAL
Agr. Econ. Faught	15/08		34,857	22	^{1/} 3,764	0	3,764	250	4,040	0	8,054
Agr Econ. Asst. L. Gonzales			0/D	0	0	0	0	0	1,870	0	1,870

- 1/ Includes pay increase of 5.5%.
- 2/ home leave paid by Mission.
- 3/ Computer Program \$ 8,500
- Computer Serv/Manila 10,000
- TOTAL 18,500

	SUB TOTAL	<u>67,895</u>
21 Domestic Travel		250
23 Rent, Comm., Util.		0
24 Print & Repro.		700
26 Supp. & Mat.		200
31 Equipment		0
25 Other		^{3/} 18,500
Overhead	25	<u>21,886</u>
	GRAND TOTAL	<u>109,431</u>

Revised - 10/03/74