

AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D. C. 20523
BIBLIOGRAPHIC INPUT SHEET

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BATCH # 28

1. SUBJECT CLASSIFICATION	A. PRIMARY Serials	Y-AE10-0000-0000
	B. SECONDARY Agriculture--Agricultural economics	

2. TITLE AND SUBTITLE
Agricultural economics related to the less developed countries; agreement to increase the capability of Cornell Univ.: annual report 1974/1975

3. AUTHOR(S)
(1010 Cornell Univ. Dept. of Agr. Economics

4. DOCUMENT DATE 1975	5. NUMBER OF PAGES 64p.	6. ARC NUMBER ARC 338.1.C814
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7. REFERENCE ORGANIZATION NAME AND ADDRESS
Cornell

8. SUPPLEMENTARY NOTES (Sponsoring Organization, Publishers, Availability)
(Activities summary)

9. ABSTRACT

10. CONTROL NUMBER PN-RAB-557	11. PRICE OF DOCUMENT
12. DESCRIPTORS Agricultural economics	13. PROJECT NUMBER
	14. CONTRACT NUMBER CSD-2823 211(d)
	15. TYPE OF DOCUMENT

OSD-2823 211(d)
338.1.C 814

US/AID 211(d) ANNUAL REPORT

October 1, 1975

Title: A grant agreement to increase the capability of the New York State College of Agriculture, Cornell University in agricultural economics related to the less developed countries.

Grantee: Department of Agricultural Economics, Cornell University

Director: B. F. Stanton

A. Statistical Summary:

Period of Grant: 6/24/70 to 6/30/76	Amount of Grant: \$290,000.00
Expenditures for Report Year: \$80,389.12	Accumulated: \$232,652.13
Anticipated for next year: \$57,347.83	

B. Narrative Summary:

The 211(d) grant for work in agricultural economics at Cornell University has made possible an expanded graduate teaching and research program concerned with applied economic problems in agricultural development. Primary emphasis has been placed on developing more substantial programs concerned with agricultural markets and market systems, international trade and the terms of trade between agriculture and other sectors. This supplements and complements existing strength and work in production economics, land tenure systems, price policy, evaluation of new technology and sector analysis with particular reference to employment and income distribution.

Grant funds were used during the 1974-75 fiscal year to support the equivalent of seven full time graduate assistants either in Ph.D. programs at Cornell or overseas collecting data for thesis or department research. Projects were initiated in Kenya with the cooperation of the Institute for Development Studies and in Indonesia with the cooperation of the Indonesian government's agro-economic survey unit, Gadjara Mada University and the Agricultural Development Council. Field research was completed on two projects in different areas of Nepal. A major field study in Northern Nigeria in cooperation with Amadu Bello University was nearing completion. Theses and research reports summarizing earlier field studies in the Cameroons and in Uganda were completed. A doctoral student from Nepal completed his thesis on international trade and returned to a position of responsibility in Nepal.

Graduate teaching was again enriched by the presence of Dr. Uma Lele during six months of the 1974-75 academic year. A special graduate seminar on rural development with emphasis on problems, experience and analysis from East and West Africa was conducted. During the spring term 1975 Dr. G. Parthasarathy, Professor of Agricultural Economics at Andhra University became a visiting research scholar at Cornell under sponsoring from the Agricultural Development Council. He has presented a number of special seminars, served as a consultant to faculty and students and contributed effectively to discussions on the development of agricultural markets and pricing policies.

C. Detailed Report

1. & 2. General Background and Purpose of the Grant

This grant was one of six made to land grant universities with substantial interests and commitments to teaching and research related to economic problems associated with the process of agricultural development. A major thrust of the grant was to expand and strengthen the competence of resident faculty committed to work on problems of low-income countries. In particular, this grant made possible a graduate research and teaching program involving significant issues and field studies in developing countries. As a result of this program, the findings of the research can be applied directly to existing problems. It provides a mechanism for American teachers and scholars to become directly involved with the real problems and issues of development together with their students in the classroom and at specific overseas locations. This aspect of the work is deemed extremely important. It would not be possible without the 211(d) grant since traditional funding sources would be inadequate or lack sufficient flexibility to provide for overseas research.

3. Objectives of the Grant

A. Objectives Restated

(1) To create a framework within which a significant number of U. S. economists interested in agricultural development in the less developed countries can work cooperatively on certain research problems of urgent importance to these countries, thereby increasing the effectiveness of their efforts, and making the most efficient use of scarce research resources; to provide an efficient means for applying

the product of this research in a way which will be helpful to the developing countries; and to contribute to the development of professional contacts and collaboration among agricultural economists in the United States and in the developing countries.

(2) To increase the competence of the University in the area of economic development problems, particularly as they relate to the agricultural sector and the interaction between agriculture and other economic sectors, by providing a continuing arrangement for faculty members to conduct research on campus and abroad and to carry on work in developing countries.

(3) To enable the University to provide increased training in economic development and agricultural economics at the graduate level for students from the U. S. and developing countries.

(4) To provide members of the University faculty the enriching experience of dealing directly with problems of agricultural development in the less developed countries by arranging for them to serve with AID in capacities which will contribute to the development of their professional skills and to their understanding of how to accelerate agricultural growth in the less developed countries and deal with the practical problems involved in the process.

B. Review of Objectives

Contributions have been made to each of the four objectives since the grant was instituted. Primary emphasis has been given to the first three objectives. Central to our function and mission is the training of graduate students from a wide range of backgrounds and different countries and the involvement of these students in significant research programs within emerging nations. This grant has

broadened the horizons of a number of our faculty who had not previously been involved with overseas students and research programs. Every graduate student and faculty research project has been developed cooperatively with professionals overseas and monitored by them along with our faculty. Where appropriate, US/AID officials or national government representatives have been involved in the various stages of field research and recommendations growing out of the studies. Such interaction is particularly important if research results are to be used and students doing the work are to become an integral part of agencies charged with the development and administration of agricultural policy in their own countries.

In this manner, the competence of our faculty to work with development-oriented research has been increased both through teaching and field experience. The program has strengthened teaching at the graduate level, increased our capacity to identify meaningful problems for continuing research and improved our interaction with faculty at the other 211(d) institutions in the United States as well as faculty and research workers in the developing countries.

4. Interaction With Other Cornell AID Grants

This grant has enhanced the capacity of our faculty and Department to support and complement work associated with other US/AID funded activities at Cornell University.

A. The Department of Agricultural Economics has a current contract with US/AID for research directed by Dr. John W. Mellor on "Analysis of Direct and Indirect Effects of Technological Change in Agriculture", Contract No. AID/ta-c-1131. This is a successor to an earlier

contract directed by Dr. Mellor entitled, "The Impact of New Agricultural Technology on Rural Employment and Income", c.s.d. 2805. The specific research associated with these contracts has made it possible to have a larger, more comprehensive program in international agricultural development within the Department and College. Students funded under the 211(d) grant program have been able to consider and use methodology tested as part of the contract work and vice versa. It has provided a larger nucleus of doctoral students working on important problems in overseas locations. It has improved the seminars, graduate teaching and research environment to have these related efforts in one location. Consultants brought to the campus in connection with the contract have interacted with 211(d) funded students and others with similar interests. The complementary impact of such work is more substantial than is commonly recognized, particularly where students criticize each other's proposals and research designs and report on overseas work when theses are in the final stages of writing and publication.

B. Faculty in the Department of Agricultural Economics have provided important technical support and information for another US/AID grant to Cornell University, c.s.d. 3158, "Policies for Science and Technology in Developing Nations". This grant is administered by the College of Engineering and the Program on Science, Technology and Society. Our faculty's interaction has been on specific proposals for projects in individual countries where basic agriculture is nearly always a major industry and source of national product. Professors Conklin, Forker, Freebairn and Sisler have worked with counterparts in Engineering in considering alternative projects and providing

insight on specific national institutions and existing agricultural experiment stations and research centers. One of our department graduate students, Marco Ferroni, was funded for his overseas research while helping complete one phase of this program in Peru with the Peruvian National Food Consumption Survey.

C. Leadership for a 211(d) grant to strengthen the capabilities of Cornell University for special problems of tropical soils is provided by the Department of Agronomy. This program is a joint effort among five universities. Our faculty in Agricultural Economics has had a continuing set of contacts with Cornell soil scientists both in discussing administrative issues associated with the 211(d) grants and in considering the relative priorities of different approaches to specific research problems and projects. No joint research efforts have been conducted formally by the two departments under these grants. Some informal work among both students and faculty has occurred to the benefit of both groups.

A very important dimension of a research and teaching environment at the graduate level is competence in a range of related disciplines in agricultural science. The existence of strong graduate programs in agronomy, plant breeding, biometrics, plant pathology, entomology, animal science and development sociology is fundamental to technical support and knowledge used in solving economic problems related to the agricultural sector. Such research and graduate study can only be fostered if there is support for pioneering work in many different fields. Funding from US/AID has provided a very significant part of the marginal resources so necessary to maintain a strong program in International Agriculture in this College particularly during the past

five years. The 211(d) grant has brought scientists from a broad range of fields into closer contact and, we feel, strengthened our competence to train graduate students and conduct fruitful research.

5. Cooperation With Other Universities Which Have 211(d) Grants

Over the five years of the 211(d) grant there have been increasing efforts on the part of the six universities with support for agricultural economics to increase communication among faculty and students with common interests in research or overseas locations for work.

As reported in more detail in our 1974 report Peter Matlon, a Ph.D. student at Cornell, benefitted substantially from three months of work at Michigan State before going to Zaria in Northern Nigeria for his field research. In a similar situation, Richard Goldman, a Cornell graduate student, has completed his thesis research in the Cameroons on a project financed and directed from Southern University.

Dr. Randolph Barker, Adjunct Professor at Cornell and Economist at IRRI met with groups of graduate students from Minnesota, Michigan State and other universities during his year at Cornell to plan research programs and thesis projects at IRRI. Dr. Mellor was invited to present a series of lectures and seminars at Iowa State University during the academic year building linkages between staff and students at these institutions.

Faculty associated with each of the 211(d) grants have benefitted from meetings held during 1974-75 in reviewing progress on the individual grants and considering renewal or extension. During that span special programs or meetings were held at Southern University, Virginia State, Cornell, Minnesota and Michigan State as well as Washington, D. C.

Even though the primary focus of these meetings was not to review current research and international work in process there was an important transfer of information and knowledge among individuals and institutions. This communication continues. There is a regular exchange of publications among all 211(d) grant recipients in agricultural economics.

6. Accomplishments

The first three objectives of the grant have received central concern from our faculty and are closely related. As faculty competence and knowledge about the central issues associated with agricultural development improves, the quality of teaching and research is enhanced. As we review the accomplishments resulting over five years of the grant, it is difficult to establish one single criterion or least common denominator by which progress can be measured. Accomplishments are both quantitative and qualitative. The impact on faculty knowledge and understanding will be the most important legacy with returns to come in many succeeding years of teaching, research and graduate advising.

A. Graduate Teaching

A graduate teaching program in agricultural economics which clearly recognizes the needs of students concerned with development problems associated with the agricultural sector has been developed over the last 15 years. The grant has provided stimulus to our teaching program in a variety of ways. The annual report prepared in 1974 outlines the courses which have been developed and are currently offered to students with interests in economic problems within the

agricultural sectors of developing countries.

During the academic year 1974-75 Dr. Uma Lele was on leave from her position as economist at the World Bank during the fall semester. She held an appointment as a Visiting Associate Professor of Agricultural Economics in this Department and in the Center for International Studies here at Cornell. She offered a special graduate seminar on the Economics of Rural Development Policy and Institutions with Special Reference to Africa during the fall semester. It drew heavily on her recent research and published manuscripts on rural development in both East and West Africa. It provided a welcome new dimension to our teaching program particularly for students with interests in the particular problems of agriculture and rural development in Africa.

During the fall term 1975-76, Dr. Dharm Narain is teaching the graduate seminar on economic problems of agricultural development. His central concerns will be on price and production policies and their implementation in less developed countries. Dr. Narain is Chairman of the Prices Commission in India and is a Visiting Professor of Agricultural Economics at Cornell University from May 1975 through April 1976. Some of the topics Dr. Narain will cover in his course include: India's agricultural performance since Independence; India's changing agricultural structure; growth and instability in Indian agriculture; regional variations in agricultural growth; employment implications of the new technology; farm size and the gains from new technology; tenancy, resource use and technological change; new technology and the agricultural laborer; agricultural price policy; nature of India's food problem and food policy; yield uncertainty and

crop insurance; and agricultural taxation in India.

B. Graduate Student Participation

Over the past five years, enrollment of graduate students majoring in Agricultural Economics at Cornell has averaged approximately ninety. Almost half of these students have an important interest in some aspect of the problems of economic development in the agricultural or rural sector of the economy. The following list of graduate students majoring in economic development during the 1974-75 academic year is representative of the cross-section of U. S. and foreign students attracted to these programs.

In addition, a significant number of graduate students from both Agricultural Economics and other departments at Cornell minor in economic development. These students also benefit from the enriching experience afforded by interaction with the students and the research programs supported by funds from the 211(d) grant in Agricultural Economics.

U. S. Students

<u>Name</u>	<u>Degree Sought</u>	<u>Name</u>	<u>Degree Sought</u>
Calkins, Peter H.	Ph.D.	Hornig, Ellen C.	M.S./Ph.D.
Eddy, Edward D.	M.S.	Kraft, Steven E.	M.S.
Ender, Gary P.	M.S./Ph.D.	Lassiter, Gregory C.	M.S./Ph.D.
Eriksen, John H.	M.S.	Matlon, Peter J.	Ph.D.
Galt, Daniel L.	Ph.D.	Orsini, Jan B.	M.S.
Garcia, Philip	Ph.D.	Schultheis, Michael J.	Ph.D.
Goldman, Richard H.	M.S.	Wiggans, Richard E.	M.P.S.

Foreign Students

<u>Name</u>	<u>Degree Sought</u>	<u>Country</u>
Akenda-Ondoga, V. J.	Ph.D.	Uganda
Badillo, Arnaldo J.	Ph.D.	Venezuela
Belt, Juan A. B.	Ph.D.	Cuba
Brubacher, Ray	M.P.S.	Canada
Burger, Veit	Ph.D.	Austria
Colmenares, Adolfo G.	M.S.	Venezuela
Desai, Bhupendra	Ph.D.	India
Desai, Shakuntala S.	M.S./Ph.D.	India
Doraswamy, Gorantla	Ph.D.	India
Edirisinghe, Neville	M.S.	Sri Lanka
Escobar, German	M.S.	Colombia
Fernandez, Jaime	Ph.D.	Nicaragua
Ferroni, Marco A.	Ph.D.	Switzerland
Hart, Gillian P.	Ph.D.	South Africa
Jafri, Syed H. A.	M.S.	India
Karunasekera, M.	Ph.D.	Ceylon
Lee, Seon	Ph.D.	Korea
Madjd, Mohammed	Ph.D.	Iran
Mensah, Patience	M.S.	Ghana
Mikdadi, Nayer	M.P.S.	Lebanon
Monardes, Alfonso	Ph.D.	Chile
Monares, Anibal G.	Ph.D.	Chile
Mori, Shinji	M.S.	Japan
Noori-Naini, M.	Ph.D.	Iran
Ranade, C. G.	Ph.D.	India
Rukandema, Fred M.	Ph.D.	Uganda
Sepulveda, Sergio	Ph.D.	Chile
Smith, W. W.	M.S./Ph.D.	Jamaica
Sobrinho, Antonio	Ph.D.	Brazil
Unsal, Fahri M.	Ph.D.	Turkey
Worachai, Laxmi	M.S.	Thailand
Yadav, Ram P.	Ph.D.	Nepal

C. Graduate Students Currently Conducting Research Overseas

It is the policy of the Department to encourage every Ph.D. student with professional interest centered in the problems of economic development in the agricultural sector of LDC's to participate in field research overseas. This is typically a cooperative venture with an agency of the host country, a university, or an international organization. Students must be actively involved in the development of the specific project on which they work, even though it is a part

of a larger research enterprise formulated by Cornell faculty or cooperatively with research workers at the host institution. This stimulates use of, and concern for results at the location where the research is to be completed. We have found that many foreign students have little familiarity with the role of agriculture and the development process in their own country. Field research expands the horizons of students who will be the future professionals in developing nations. It also provides them with a set of institutional contacts and relationships which become important and useful upon completion of their degrees.

During the academic year, 1974-75 the following students were at some time overseas working on thesis research.

<u>Name</u>	<u>Date Left U.S.</u>	<u>Country</u>	<u>Source of Field Support</u>
Burger, Veit	January 1974	Nepal	US/AID, 211(d)
Hart, Gillian P.	October 1974	Indonesia	US/AID, 211(d) Fore. Area Fellow.
Matlon, Peter J.	September 1973	Nigeria	US/AID, 211(d) Ahmado Bello Univ. Rockefeller Found.
Monardes, Alfonso	January 1975	Chile	Univ. Catolica de Chile Ford Found.
Ranade, C. G.	January 1975	Philippines	IRRI, US/AID
Rukandema, Fred M.	May 1975	Kenya	IDS-Kenya US/AID, 211(d)
Unsal, Fahri M.	October 1974	Turkey	Ford Found. US/AID, 211(d)

In addition, the following students returned from research overseas and are working on or completed their dissertations and research papers.

<u>Name</u>	<u>Dates Overseas</u>	<u>Country</u>	<u>Source of Field Support</u>
Calkins, Peter H.	August 1973 - February 1975	Nepal	Fore. Area Fellow. US/AID, 211(d)
Goldman, Richard H.	January 1974 - November 1974	Cameroons	So. Univ. US/AID contract
Schultheis, Michael J.	July 1971 - August 1973	Uganda	Makerere Univ. Rockefeller Found. US/AID, 211(d)

Funds to support overseas research at the doctoral level comes from a substantial number of different sources. Either directly or indirectly the host institution, government, or agency from which field research is directed, must participate. Office space, equipment, logistical support and minimum supplies must come in large measure from this source. The State of New York provides the basic salary support for faculty, clerical and administrative staff, office space, library materials and similar items. Without these two quite different commitments all the other parts of the research effort could not function.

Funds for travel to and from the country where research is undertaken, salary and maintenance for the doctoral students, funding for interviewers, data manipulation and similar field expenses come from research grants and contracts, competitive fellowship or scholarship programs and State assistantship funds. As indicated in the foregoing materials nearly all of our students combine two or more sources of funding for their research program.

The US/AID 211(d) grant has made it possible for students and the overseas host institution to engage in more substantive and important research involving new primary data than could have been considered otherwise. When this grant program is terminated in 1976 it will necessarily mean that a smaller number of Ph.D. students from LDC's or American students interested in these critical development problems will be able to consider overseas doctoral projects. This grant has been a major factor in allowing an important group of new Ph.D.'s with major concentrations in agricultural economics to start their careers after a substantive research experience.

7. Research and Doctoral Studies

One of the principal objectives of the grant and the faculty in this Department was to broaden the horizons and knowledge of faculty and graduate students by making possible directed doctoral research concerned with pressing real problems within the agricultural sector in less developed countries. This continues to be the most important way in which grant funds are used.

In this section we will report on the status of a series of research projects supported in part by US/AID 211(d) grant funds. In nearly every case some combination of resources has been required to make the research effort possible. In most of these cases the marginal dollars made possible by the grant has had a substantial multiplier effect in terms of the conception of the research and its execution.

A. An Econometric Model for the Foreign Trade Sector of India;
1960/61 - 1971/72 - Ram P. Yadav and D. G. Sisler

The objectives of this study were (1) to analyze India's pattern of trade from fiscal years 1960 through 1971; (2) to develop a trade model at a disaggregated commodity group level; (3) to predict future values of imports and exports assuming different values of exogenous variables; and (4) to examine the effects of trade policies such as devaluation and tariffs on the trade balance.

In June 1966, India devalued the rupee by 36.5 percent. A four percent per annum increase in the total imports of India during the devaluation period (1960/61 - 1965/66) was followed by a 4.6 percent per annum decline during the post devaluation period (1966/67 - 1971/72). A 3.34 percent per annum increase in the total volume of exports was

observed during the entire study period. Of the import commodity groups analyzed, the most striking changes were noticed in the imports of food and the machinery and transport sectors. Imports of both groups increased substantially during the first period and declined in the second period. Exports of non-traditional commodities, namely machinery and transport goods, and miscellaneous manufactured goods increased substantially during the entire study period.

Changes in the pattern of commodity trade, political relations, domestic production, and foreign aid have had a marked influence on the flow of imports from and exports to different economic regions of the world. During the study period, trade between India and the Soviet Union and Eastern Europe increased significantly. A change in export composition largely from traditional to non-traditional commodities is probably the most significant factor in expanding trade with the economic community of Asia and the Far East (ECAFE) and African countries. An increase in the domestic production of food and capital goods as well as a decline in foreign aid have reduced the quantity of imports from the United States, the United Kingdom, and West Germany. At the same time, India's exports of primary products to these traditional trading partners has declined.

A disaggregated trade model consisting of distributed lag single equations for import demand of thirteen commodity groups and export demand for fifteen commodity groups was developed.

The analysis indicates that the majority of Indian imports are more elastic than had been determined by earlier investigators whose analyses were at a more aggregated level. Most Indian exports, on the other hand, are extremely inelastic with respect to their export prices.

An increase in the world income has a considerable impact on the demand for India's non-traditional exports such as chemicals, machinery and transport goods, and miscellaneous manufactured goods, because of high income elasticity for these commodities.

Examination of several rates of devaluation indicated that as the rate of devaluation rose the total value, in dollars, of both imports and exports would decline. The percentage decline in the value of imports would be greater than the corresponding decline in the value of exports since imported commodities have a higher elasticity than do exported commodities. The policy of export subsidies is inappropriate because of the inelastic characteristics of Indian exports with respect to price. An imposition of tariffs can reduce imports selectively and does not affect export earnings.

Although devaluation improves the trade balance, it brings about great loss, both through a reduction of indispensable imports and a decline in foreign exchange earnings. It is concluded that a reasonable policy would be to regulate Indian imports, through tariffs while at the same time placing a greater emphasis on the promotion of Indian exports, particularly of non-traditional commodities. This policy is preferable to either devaluation or export subsidies. Increased trade between India and developing nations, particularly ECAFE and African countries, is deemed important to enhance the export of non-traditional commodities.

B. An Examination of the Distribution of Policy-Induced Income and Labor Effects Among Producers of Groundnuts in Nigeria - Peter J. Matlon and D. G. Sisler

The general objective of this study is to examine existing patterns

of employment, income distribution, and the adoption of new technology in the production of groundnuts and foods with which they are multiple-cropped in Kano State, Nigeria. More specifically, the objectives can be divided into three interdependent components.

1. Income Distribution

- a. To provide a description of existing patterns of income distribution among producers of groundnuts.
- b. To determine the differential impact of alternative pricing policies on farm income.

2. Labor Allocation

- a. To construct a labor profile describing seasonal labor requirements by age, sex, and activity.
- b. To determine the differential impact on demand for labor under existing governmental pricing and credit policies.

3. Farm Management

- a. To describe existing farm systems and test current patterns of resource allocation against the standard of economic efficiency.
- b. To identify major structural constraints to increased output as a function of policy alternatives.
- c. To generate farm plans which will maximize farm incomes.

The data for this research was collected from a sample of 36 farmers in three villages in Kano State, Nigeria. The villages were selected on the basis of their size, proximity to market facilities, and the availability of contact with agricultural extension agents. The three villages were chosen to be on a continuum from relatively large but typical trading centers to smaller villages which nonetheless

serve as pricing centers for farm outputs and sources of agricultural inputs to a very small cluster of homes isolated from market transactions. A general survey of 440 farmers in the region was conducted. From this general study, judgments were made concerning the three villages, and a random sample of twelve farmers per village was selected.

An enumerator was stationed in each village and visited the 12 families assigned to him three times a week. Since it was recognized that this continual and frequent contact between farmer and enumerator would be trying, indicators of willingness to cooperate through an entire cropping year were asked of potential interviewees. Several farmers were excluded from the sample on the basis of their answers, and in each village interviewing began with 15 farm families to allow for drop-outs. During the period from March, 1974 to June, 1975 the interviewing proceeded. Generally, cooperation was good, and it is felt that reliable data has been assembled on all phases concerning inputs used, technology, yields, area worked, farm labor and off-farm work. The screening questions were most helpful, and will provide valuable guidelines for researchers wishing to conduct similar studies.

After the enumeration aspect of the work was completed, each farm field was measured to obtain accurate yield data. Soil tests were also made, and recall checks completed where information was missing, vague, or inconsistent.

All phases of the field work were completed in August, 1975 and Mr. Nation will return to Cornell in October. Linear programming models will be constructed reflecting a range in the structural and economic characteristics of the sample. Subsequent analysis will

attempt to identify the potential production, income and labor effects of price and credit policies and of new technologies among farm types. Upon completion of the analysis, results will be written up as a Ph.D. dissertation, which is expected to be completed by December, 1976.

C. An Economic Appraisal of International Tourism as a Contributor to the Development of Nepal - Veit Burger and D. G. Sisler

Nepal, being one of the least developed countries in the world, with a predominant agricultural sector, is increasingly turning to international tourism as an engine of growth. The overall objective of this project is to analyze and evaluate the impact of international tourism on Nepal's major economic variables:

1. The balance of payments
2. The national product
3. Personal and regional income distribution
4. The employment situation
5. Agricultural production.

The analytical tool used will be a modified input-output approach, using primary data collected by the author over a 19-month period in Nepal. The necessary fieldwork was completed with the help of local enumerators, and the cooperation of the National Planning Commission. Between September, 1975 and June, 1976 the data will be analyzed and a manuscript prepared.

The personnel of the Nepal Mission of US/AID were most helpful in establishing contact with key personnel in universities, government and business. They provided valuable information and insights concerning project design and objectives. Government affiliations, especially with the Department of Tourism and the National Planning Commission

were of vital importance, particularly where endorsement by government officials made possible the use of valuable data and access to knowledgeable individuals. The establishment of contacts and affiliations supplied the researcher with first-hand insight into the complexities of the decision-making process in his host country's institutions.

Two sets of data were collected; one, the expenditure pattern of various types of tourists, and two, the input structure of various industries directly or indirectly (through intermediate inputs) related to international tourism. The questionnaire for the tourist expenditure survey was designed with the help of Professor D. G. Sisler, who visited Nepal during the formative stages of the project. It was a diary type questionnaire, printed in English, French or German. The diary recorded socio-economic data and daily expenditures while in Nepal. The diaries were returned in special boxes provided at hotels and at the airport, or mailed in a prepaid envelope which was enclosed. The initial response rate was approximately 27 percent (the response to the German version being somewhat higher than the English or French). About 90 to 95 percent of the responses can be used for analysis, i.e., about 700 questionnaires. This represents about 1,200 tourists, or roughly 2 percent of the annual tourist flow. Since tourists from non-English, French or German speaking areas were found to be under-represented, an abbreviated questionnaire was developed and printed in English, French, German, Italian, Japanese and Hindi. This was handed out at the airport to tourists leaving Nepal. With the exception of the Hindi version, the response rate was close to 100 percent.

The second set of data, the input structure of industries affiliated with tourism, was divided into two groups, the first group comprising

all industries which sell directly to tourists, i.e., hotels, restaurants, lodges, travel agencies, curio shops, etc. Into the second group fell those industries which sell their output to industries in the first group. Data on the input structure of industries in the first group was collected by personal interviews, and from audited profit and loss accounts. Secondary data, e.g., feasibility studies of the World Bank or NIDC for hotel construction, were collected whenever possible. Government revenues and expenditures, mainly capital expenditures for infrastructure, were collected from various government agencies.

From the author's viewpoint, the most interesting part of this project was the possibility to design one's own study and then carry it out. This is a more challenging task than to do a predetermined part of a larger research design, but certainly more rewarding in terms of experience and understanding gained.

The period of primary data collection has been completed. The level of sophistication inherent in much of the data sets limits to the analytical procedures to be used. Simple budgeting will be employed to analyze the data collected in diary form. Preliminary results indicate that these diaries will provide the first reliable statistics on average length of stay by tourists of different classes, their daily expenditures by category, and the sectors of the economy most importantly influenced by tourism. It should be possible to generate income and employment multipliers to determine the secondary benefits of initial expenditures by tourists. The sectoral analysis facet of the study will allow an appraisal of the linkages between such activities as agriculture, handicrafts, and transportation to tourism. It is also hoped that a critical

evaluation of construction costs of hotels and restaurants, coupled with their purchases will provide valuable insights into the role which tourism plays in the international trade of Nepal. It should also suggest methods of eliminating "leakages" or activities where import substitution is economically viable and desirable.

D. The Impact on Income, Employment and Nutrition of Developing Horticulture in the Nuwakot District, Nepal - Peter H. Calkins & D. G. Sisler

The Nepalese government has in its fourth and fifth Five Year Plans, plotted out a growth strategy which divides the country into four north-south growth axes. Along each axis an effort has been made to strengthen the road network and the transportation of goods, with a view to promoting specialization in grain and cash crops in the plains, fruit and vegetables in the middle hills, and livestock and timber in the high mountains. The theoretical basis of this policy is that the three altitudinal zones could gain from specialized production and trade in the above commodities, which are believed to be consistent with factor endowments in each zone.

This study was an inquiry into the extent to which the farmers in the middle hill zone are able and willing to specialize in horticultural production and the likely effects on their patterns of production, employment, and diet should they do so. The middle hill region was chosen because it is here that population pressure and resultant deterioration of the land base are the most pronounced. It was decided to study Nuwakot District because of the great diversity in micro-climate, land base, ethnic groups, and level of development within the district. It is believed that although each district must

be viewed separately for planning purposes, the methodology of the present study and the general nature of the microeconomic interactions are applicable to the middle hill region as a whole.

To determine the relevant economic and ecological subgroups and the patterns of present production, consumption, trade, and motivation, the first part of the study dealt with 600 farms covering an altitude range of 1,700 to 6,500 feet and spanning greatly differing distances from Kathmandu, the hub of the central growth axis. This part of the study yielded interesting conclusions. It was found that there was a wide range of income and wealth but that it tended to be very skewed, with 75 percent of the people in the lower half of the scale. Income tended to increase as altitude decreased, but the very wealthiest people preferred to dwell between 3,000 and 4,000 feet because of the superior climate and the fact that the output of their upland maize and millet fields was supplemented by holdings of paddy land at lower elevations. Hindus, who occupy this altitude range almost exclusively, were found to be much better off than the Tamang tribesmen of higher elevations. This reflects the historical fact that the Tamangs were driven to live at altitudes of more than 4,000 feet, where they must work rockier, less well-irrigated land with a much cooler climate, rather than a clear-cut ethnic difference.

Such a situation has implications for differential employment patterns. Because of lower levels of agricultural production and irrigable land, the Tamangs must seek off-farm employment in the off-season (between December and April) much more often than the lower-dwelling Hindus. Although the search for such employment causes friction, the days worked per month in every season are much more

uniform at high than at low elevations. At all elevations, however, the real labor peaks occur at the periods of planting and harvesting grain.

Nutritionally, levels of calorie intake were found to be adequate. The people at all altitudes consume a preponderance of grain in their diets. Levels and quality of protein and some vitamins and minerals were more varied, with deficiencies in calcium, riboflavin, and niacin the most obvious, especially in the above-mentioned off-season. Significantly, levels of nutrition varied little with economic class and much more with the season of the year, at all altitudes.

In the second part of the study, a subsample of forty farmers were studied every day for a year. These were divided into four economic/ecological groups:

Lowland	Less than 2,500 feet altitude
Middle Subsistence	2,500 - 5,000 feet altitude, less than 0.5 hectare
Middle Endowed	2,500 - 5,000 feet altitude, more than 0.5 hectare
Upland	More than 5,000 feet

After careful inspection of all statistics over the year, the single most representative farm for each of the four zones was chosen for a linear programming study to maximize income subject to defined levels of nutrition. These studies yielded conclusions concerning how income reacts to higher levels of nutrition, in addition to information on the critical question of the optimal acreages and labor allocation to horticultural production. In all four cases, the optimal solution indicated a dramatic increase of area planted to horticultural crops in each season. Although particular horticultural crops varied from

zone to zone, rape and a basic tuber crop (yams, sweet potatoes, potatoes) were found to be widely accepted and provide good levels of protein and a wide range of vitamins and minerals. Thus, these crops tended to occur in all output mixes regardless of nutritional specifications. Income did not fall as dramatically as might have been expected with higher on-farm consumption requirements--adjustments appearing primarily in the quantity of surplus production sold.

The analysis also showed that labor patterns would even out over the year as production shifted from grain peak periods to more gradual vegetable harvesting. Of course, nutritional levels would improve from their historic seasonal inequities.

Thus, in terms of all three elements of the standard of living (income, employment, and nutrition), a judicious shift of 30 to 80 percent of all acreage into horticultural crops was found to improve the lot of middle hill farmers in all four groups. The government's implicit hypothesis that this would be so was accepted, and specific improvements in the crop mix and seasonal use of land were also discernable. Finally, a within-district trade pattern was suggested as a counter proposal to the government's north-south growth pattern on the grounds that market uncertainty, shipment time, and perishability could be significantly reduced in the smaller area.

Analysis is presently in the final stages, and the completion of the thesis is expected by February, 1976.

E. The Importance of Food Legumes in Nutrition and Farming in the Hills of Nepal - Gary P. Ender & D. G. Sisler

Although legumes have long been important food crops in Nepal, the Green Revolution may be having an adverse effect in their production

and consumption. With resources concentrated on the development and extension of new high-yielding varieties of cereals, legumes may show a relative or even absolute decline in cultivation. In the hills, legumes are generally intercropped with corn, so cereals and legumes would compete for available labor rather than fields to be planted in.

This M.S. thesis made use of data collected by Peter H. Calkins for his doctoral dissertation. The attempt was to combine the results of the nutrition and farming analyses to give a fairly complete picture of the basic food production and consumption system. The part that legumes play in the system was, of course, the focus of the study.

Approximately 600 households were surveyed twice each, over the course of nine different months. By dividing the households into two altitude groups (above and below 4,000 feet) and combining them into three three-month "seasons", one can analyze the differences in consumption over the year and between the higher and lower altitude households. In particular, the contributions of cereals, legumes, and animal products to total protein consumption were studied, with a further focus on the essential amino acid lysine. Lysine is usually the limiting amino acid in cereal-based diets, so the level of its consumption is an important factor in determining the actual utilization of ingested protein.

Legumes contributed a significant part of total protein in the lower altitude group, but not in the upper group. Legumes were even more valuable as a source of lysine; although they were important in both altitude groups in the monsoon season, the upper altitude group appeared to have an average net deficit of lysine. Although legumes are high in thiamine, they were not found to be important sources of

thiamine here because cereals were generally consumed in a nearly whole-grain form.

In the farming system, legumes were not seen to have a large share of cropped area, total grain production, value of production, or labor use. More importantly, there was a trend apparent in the daily data on four farms intensively analyzed. These farms were selected as "typical" from four sub-categories of the study area, defined as "upland" (over 5,000 feet), "lowland" (below 2,500 feet), "middle-subsistence" and "middle-endowed" (both between 2,500 and 5,000 feet). The endowed farms were larger than 0.5 hectare and the subsistence farms smaller; the remaining farms averaged about 0.5 hectare. These divisions allowed a refinement from the initial separation into two groups. The trend revealed was that the upland and lowland farms were lower in legume production (and presumably consumption, since there was almost no trading of legumes in any of the four categories). Labor allocation to cereals and legume production activities were also analyzed, especially to see if there was conflict or complementarity between cereals and legume crops. Close inspection of the data for the main harvest in November revealed a fairly complex pattern of interaction. Whether a species shatterred* in the field was seen to be an important factor in the pattern, as the harvesting of those that did not could be postponed to alleviate any labor shortage. The degree of conflict between legumes and cereals varied among the four farms, but seemed to be most severe on the upland farm, where the production of legumes was the lowest. Cultural preferences are also

*Shattering is when the grain becomes overripe and falls from the supporting head, thereby being lost to the harvest.

thought to be important in production decisions, although one often cannot tell whether these are a result of the underlying agronomic conditions, or a reinforcement of them. In any case, it is believed that cultural preferences do change when viable alternatives are presented.

So far, the government of Nepal has given almost no attention to legumes. Programs of the following kinds should be considered. The upland areas will need cold-tolerant, faster-maturing varieties. The midland areas would benefit most from shorter-season, higher-yielding varieties. The lowland areas may have an excess of moisture for good cultivation of legumes, but this supposition may be disproved by subsequent research. Even without research, it seems probable that a good program of collection and selection could have a large payoff. Where this is inadequate, breeding could take over, developing new varieties. India has developed shorter season varieties of several legume species which should be tested in Nepal. In light of the importance of legumes in the diet, it is recommended that a program of development be undertaken.

The thesis is in the final stages of preparation and should be completed by December, 1975. It is also interesting to note that this thesis has catalyzed interest which will lead to broader research in the area of legumes, including a doctoral proposal by Mr. Ender.

F. An Analysis of the Interaction Between Economic and Welfare Factors in Labor Supply Decisions - Gillian P. Hart & J. W. Mellor

In response to the pressing need to raise the real incomes of the poor, increasing attention is being devoted to improving employment opportunities for landless laborers and small farmers on the margin of

subsistence. The employment problem consists of three separate but interacting elements. One, the supply of labor which is to be absorbed; two, the availability of jobs which could absorb that labor; and three, the supply of consumer goods (particularly foodgrains) to back wages for expanded employment. Major emphasis is usually placed on three, i.e., expanding the demand for labor. With respect to open urban unemployment this is obviously the most relevant issue.

However, in rural areas rural unemployment and underemployment are extremely complex problems, and even in very densely populated areas simplistic views of "disguised unemployment" and "surplus labor" might be dangerously misleading and are unlikely to provide a useful basis for policy. This is largely because of problems of seasonality, longer hours worked by lower income groups and relatively high labor force participation rates by women and children. These factors are likely to have important implications for family welfare in terms of health and nutritional status. Thus the basic assumption upon which this study is based is the necessity of understanding the manner in which economic and welfare factors interact with one another in determining the family's allocation of labor both within the household and in income earning activities.

The broad objectives of this study are to:

1. Formulate a conceptual framework, the aim being to identify some of the major determinants of labor supply, and examine their interrelationships in such a way as to be able to predict the effect of changes in these determinants on patterns of labor supply,
2. Subject these hypotheses to empirical testing and review the theoretical framework in the light of empirical findings,

3. Analyze some of the policy implications arising from this analysis which might be relevant in the formulation of employment and welfare policy in Java.

The Agro-Economic Survey, Bogor, Java, has been collecting farm management data since 1968/69 consisting of intensive socio-economic, health-nutrition and physical-biological studies in three villages in Kendal district, north coast of central Java. In April, 1975, work on this project began with affiliation with the Survey in order to work with the project on the ecology of these coastal villages.

In May preliminary interviewing was done in the villages and at that time it was found that the two primarily rice-cultivating villages had been experiencing major problems of pest infestation (*Nilaparvata lugens*) and it was evident that a number of households have suffered major declines in income and welfare.

A second visit to the study villages was made in June; further preliminary interviews were conducted in order to pretest several of the questionnaires as well as obtain some insight into the impact of the pest infestation. In summary, the tentative findings which emerged include:

1. A major shift from agricultural wage labor to relatively low productivity activities such as gathering wild plants, wood, snails and fishing,
2. A marked decline in food expenditures,
3. Decline in real wages in the relatively few remaining jobs,
4. Sales and pawning of household goods.

The question then arose of the advisability of selecting an additional village with normal conditions for comparative purposes.

However, it became evident that the whole of the lowland coastal area of Kendal had been affected by pest infestations and incorporating a village from another district would cause major delays. It was, therefore, decided to commence interviewing in the original villages.

During July the first of the basic questionnaires was completed in one village. Since mid-June a new rice crop has been planted which so far has escaped pest infestation. In the other agricultural village tobacco has been planted extensively. In general, conditions in both villages appear to have improved although both are still in a somewhat precarious position.

Sampling has been based on a census conducted in the study villages during 1974 using stratified procedures. Eighty households were selected from each village, of which forty are landless and forty own agricultural land and/or brackish water fish ponds. The latter were stratified according to landholding size, and a proportionate sample selected randomly within stratum. The landless group was stratified according to household size, excluding those households containing only one person.

Two types of questionnaires have been formulated:

1. A set of basic questionnaires covering household data, asset holdings, farm management data (particularly patterns of labor demand), consumption patterns, sources of income and health/nutritional data,

2. A questionnaire which will be applied to each household twice a month covering labor supply income and expenditure, as well as input and production data for those who own land and/or fish ponds. Furthermore, monthly data on health and nutritional status will be collected

from a sub-sample of households.

If interviewing proceeds on schedule, basic questionnaires should be completed by early September, and twice monthly interviews commence in mid-September. Preparations are being made to process data from the basic questionnaires, and as far as possible data will be analyzed on a continual basis throughout the project. A mid-term report and evaluation at the end of the year containing the results of analysis to date are planned.

G. Population Growth, Labor Utilization, and Regional Development in Uganda - Michael J. Schultheis & T. T. Poleman

Rapid population growth and poverty are the manifestations of more encompassing problems which confront the low income countries of the world--low productivity and inadequate material goods to satisfy the basic needs of the people, malnutrition and early death, and economic and political dependency relationships at many levels. This study focuses on the institutional dimensions of these problems from the perspective of the utilization of labor in Uganda, a "typical" low income country in Africa. In doing so, it indicates the principal elements which must be included in a strategy to resolve the dilemma of rapid population growth and poverty.

Poverty cannot be ameliorated without an increase in the average productivity of the working-age population and an equitable distribution of income; barring natural and man-made disasters, population growth rates cannot be lowered without a decline in fertility rates. The paradox is that until families begin to participate in a rising standard of living and modern benefits, they are unlikely to be motivated to prefer fewer children. Thus a strategy which pursues

both productivity and distribution objectives is more conducive to fertility decline than one which emphasizes either objective alone. The demographic history of the western European countries and of other countries which have experienced declining rates of fertility provides a useful framework for the analysis of the relationship between demographic variables and socio-economic conditions. Unfortunately the unique conditions which obtained in the industrialized countries at the time of their "demographic transition" appear to offer little guidance either for predicting the fertility behavior or for achieving economic and social progress in low income countries.

The case study of Uganda analyzes the dynamics of population growth, the patterns of income distribution, and the coefficients of labor utilization in relation to the resource base and the basic economic institutions. The first part of the study focuses on the national economy and its development prior to 1972. The second part presents the findings of extensive surveys conducted in Kigezi District from 1971 to 1973 on the household and village economy, with particular emphasis on household labor utilization and on patterns of labor migration. Kigezi is one of the poorest and most densely populated areas in the nation, and the surveys illustrate the general hypothesis that development policies prior to 1972 had effected little diversification of the outlying rural areas.

National development policies both before and after independence either intentionally or unintentionally have contributed to the economic and regional polarization of the country. The relatively small capital-intensive sectors are concentrated in the Kampala-Jinja-Entebbe area. Not only have they failed to generate sufficient

income and employment opportunities to accommodate the growing population, but they have limited the diversification of the economy and thereby have increased the pressure on the present agricultural systems, particularly in the heavily populated areas such as Kigezi District.

The study concludes that a strategy of development which seeks to raise the average productivity of the working-age population and to raise the real incomes of a majority of the households must incorporate two central features:

1. A greater decentralization of the modern economy,
2. A more equitable allocation of resources to the rural areas.

In the absence of such a strategy it is unlikely that living standards will rise and that fertility rates will decline.

H. An Analysis of Price Policy and Interregional Competition in Turkish Wheat Production - Fahri M. Unsal and O. D. Forker

Turkey is primarily an agricultural country. This sector provides employment for a large proportion of the population, food for the urban people, raw materials for other industries and foreign exchange that is needed for the capital imports of the country.

Wheat is the most important food crop in the country when one considers the land and the people involved, and its significance in the population's diet. This commodity supplies a major part of the calory requirements of the people. In fact, Turkey's per capita wheat consumption is one of the highest in the world.

Since wheat is so important for Turkey, self-sufficiency in this crop is one of the major goals of the planners. To achieve this, a price policy which enables the government to fix the farm and retail

prices as well as to control all the imports and exports is followed. The aim of this research is to study problems of the Turkish Price Policy in detail and provide the policy-makers with more powerful decision tools than they have at present.

The Price Policy on wheat has three main objectives, namely, achieving self-sufficiency in production, protecting farmers against very low farm prices and protecting the consumers against very high retail prices. Three important problem areas are identified in the price policy that is followed in Turkey:

1. The announcement of the support price at the harvest time does not affect the current production.
2. At present, rather crude methods are used in deciding the support price.
3. The support price does not take into account the differences between regions, the transportation cost that is involved and the cost of storage. Hence a single price level is used all around the country during a given year.

The general purpose of this study has been to formulate mathematical equations that can be used for determining government support prices at different parts of the country. The specific objectives are:

1. To determine the optimum level of production in each region and optimal shipments such that total storage and transportation cost is minimized while satisfying the demand conditions.
2. To determine the optimum purchase and sale prices in different parts of the country during different months of the year.
3. To determine the production of the regions and optimum commodity

flows if technology, costs or demand structure is changed.

For the purposes of this study, the country has been divided into a number of homogenous producing areas. Nine of these coincide with the classification of agricultural regions of Turkey.

Mr. Unsal has been in Turkey since November 1974 collecting data which will enable him to quantify the nature and characteristics of wheat production, assembly, storage and distribution. The model and relevant theoretical issues have been partially developed. Analysis and completion of the research project will be completed during the period July 1, 1975 through June 1, 1976.

I. A Study of Alternative Strategies for Relieving the Seasonal Labor Constraint and Increasing Labor Productivity in Kenya's Small Scale Agriculture - F. Mwita Rukandema & K. L. Robinson

The study is designed to identify bottlenecks to increasing output per man or per family in small-scale semi-subsistence agriculture in East Africa and to appraise the potential effectiveness of alternative methods of easing the labor constraint at critical periods. Attention will focus on the use of animal power and possibly the use of herbicides combined with minimum tillage practices which might enable a family to increase the area cultivated. Labor shortages during peak periods of activity, particularly during planting and weeding, result in a small cultivated area per farm household, late or incomplete weeding, and consequently low levels of production.

In cooperation with Kenya authorities and the Institute for Development Studies of the University of Nairobi, a sample area in Western Kenya has been selected for detailed study of labor constraints and practices now being used to ease such constraints. Farms located in

two areas of differing population densities are included in the sample. Preliminary evidence indicates that average farm sizes and the degree of mechanization (use of oxen for ploughing) are correlated with population densities. Field work is now going forward in the area. It is expected that the field work will be completed by June 1976. Analysis of the data will require some additional time, and hence the final results will not be available before late in 1976 or early in 1977.

J. Structure of Cocoa Farms in the Lekie Division, Cameroon: A Physical and Financial Evaluation - Richard H. Goldman & T. T. Poleman

This study presents a description of smallholder farms in the Lekie Division, Cameroon. Concurrently it addresses itself to the possibility that population density figures may hold the key to a short-cut method of identifying various structural components of rural agricultural populations in cocoa growing regions.

Data collected were the result of ten months' research in Cameroon and one month of investigation in Europe. This was followed by four months of analysis and composition. Data collection in Cameroon was carried out in three phases. The first phase was the collection of data from published sources not available in the United States. Phases two and three were conducted in the selected Lekie villages. Phase two was an interview which provided the answers to a 24-page socioeconomic questionnaire. This provided the basic demographic and economic statistics relating to the farm enterprise. Phase three was the completion of a land use form and the actual surveying of the farm families' land holdings. It yielded data on area under cultivation and crops

grown on each parcel. This phase also provided the statistics for fallow and forested land.

The paper additionally places the Lekie Division in perspective by presenting sections on the world cocoa economy and Cameroon's cocoa economy. An environmental overview is presented covering physical, agricultural, and economic data. A brief and general discussion of the country as a whole is followed by a more detailed presentation of the "cocoa zone" and the Lekie area.

The study also looks at the changes which have taken place over the past decade. Using the data from the present study and that of an earlier work, which also took place partially within the Lekie region, the study explains the changes which have taken place and looks for future trends.

K. The Economic and Nutritional Impact of Changes in Agricultural Production Patterns: The Case of the Philippines - John M. Staatz & D. G. Sisler

Designing agricultural extension and support policies to encourage the production of certain nutritious foods has been advocated by many government officials in the Philippines as a means of reducing malnutrition in that country. This study estimates the costs of carrying out such policies and evaluates the effect that the resulting changes in agricultural production would have on the nutritional status of the Filipino poor. In doing so, the effects on food prices, incomes, and the consumption patterns of the poor of specified increases in the production of rice, rootcrops, pulses, and fish from fishponds are evaluated. From this information, the relative effectiveness of different programs designed to increase the calorie and protein

consumption of the low-income group is determined. This is then contrasted with the nutritional impact that would accompany the introduction of a high-protein rice in the Philippines.

In order to carry out the analysis, various studies of food availability and dietary intake in the Philippines are reviewed, and the major nutritional problems of the country are identified. A methodology is developed which incorporates input-output analysis to trace through the input requirements and income-generating effects of different agricultural production programs. A 63-sector input-output model for the Philippines which was used in this study is presented and discussed. Applying the methodology developed here to the analysis of specific agricultural production programs reveals that while some of the programs evaluated (e.g., increased pulse production) would be relatively cost-effective means of increasing nutrient availability to the poor, all of these programs would incur very significant support costs. The regional impact of these programs would vary substantially, and data on the intra-family distribution of food in the Philippines suggest that much of the increased production probably would not go to young children and pregnant and lactating women, who are among the most nutritionally needy members of the population. For these groups, additional programs probably would be needed if their nutritional status is to be improved.

L. The Factor Proportions Theory and the Pattern of International Trade - Gregory C. Lassiter & D. G. Sisler

The link between specialization, trade, and economic development has been emphasized by economists since the days of Adam Smith. Yet the theories of international trade have been remarkably imprecise

in their explanation of how and why a given country has a comparative advantage in the production of some goods and a comparative disadvantage in the production of others.

The purpose of this research is to empirically test a currently accepted international trade theory which deals with this issue by predicting which goods a given country will export (or import). This theory is the factor proportions or Heckscher-Ohlin theory of international trade. It's apparently simple, but useful prediction is that a country will have comparative advantage in goods whose production intensively utilizes that country's relatively abundant factors of production.

Yet despite the intuitive appeal and corresponding popularity of the factor proportions theory, past empirical tests have failed to support this theory's predictions. The most notable of these empirical tests was carried out by Professor Wassily Leontief who demonstrated that the U. S. - a very capital rich country - exported labor intensive goods in 1947. Other paradoxical results have been found. Dr. Roger D. Montgomery, whose work was funded by Cornell's 211(d) grant, determined that the labor-rich Jogjakarta region of Indonesia exported relatively capital intensive goods and imported labor intensive goods from other regions.

Recent literature on the subject has criticized the assumptions and oversimplification of the factor proportions theory. Improvements in the simple model used by Leontief have been suggested and partially tested empirically. These improvements center chiefly on the need to include additional factors of production besides capital and labor - such as natural resources, skilled labor, and technology.

A pioneering work which included other factors of production was conducted by Professor Robert Baldwin. Baldwin's results were inconclusive and it was felt that fruitful research would be possible if more carefully delineated measures of other factors of production which influence trade could be identified.

In the present research, such a multi-factor model, designed from relevant input-output tables and factor employment data, was given two separate empirical tests. The subjects of these two tests were:

1. The trade of the United States in 1958, and
2. The trade of the Philippines in 1965.

It was felt that the wide contrast in capital/labor ratios found in the U. S. and the Philippines would provide for test results along a broad continuum of resource endowments.

To date, the research has yielded the following results:

1. As found by other authors, Leontief's paradoxical results still are apparent for the U. S. in 1958 as the U. S. continues to export relatively labor intensive goods.
2. A simple Leontief type of test on the trade of the Philippines indicates that the Philippines paradoxically exported capital intensive goods in 1965.
3. A multi-factor test, which incorporates rough measures of skilled labor, technology, and natural resources along with the traditional capital and (unskilled) labor as factors of production did not reconcile these paradoxical findings in either the U. S. or Philippine case.
4. In fact, the multi-factor model tended to suggest additional relationships which are paradoxical to the predictions of the factor

proportion theory. The most notable are:

- a. The U. S. imports relatively skilled labor intensive goods.
- b. The Philippines exports relatively skilled labor intensive goods.
- c. The Philippines exports relatively natural resource intensive goods.

This research indicates, somewhat overwhelmingly, that the origin of comparative advantage is not explained by the factor proportions theory in the case of the U. S. in 1958 and the Philippines in 1965. Further, this research suggests that the cause of this failure is not attributable to the theory's oversimplistic use of only two classical factors of production.

At present, the empirical research is essentially complete and the research results are being finalized into a Master's thesis. The thesis should be completed by November, 1975.

M. The Unemployment Dilemma of the Third World: Case of Sri Lanka -

A Research Proposal Being Prepared by M. Karunasekera & T. T. Poleman

The proposed research will examine the feasibility of implementing a two-pronged strategy for development in Sri Lanka, aiming at eradication of unemployment within a decade. This strategy calls for intensive industrialization of the rural areas through the promotion of medium and small scale industries and a radical switch from import substitution to labor intensive industrial exports. This proposal will be forwarded to the Social Science Research Council.

As a guideline to the proposed research, M. Karunasekera has prepared two papers. One deals with the socioeconomic and demographic setting

†
of Sri Lanka and the roots of the unemployment problem, its magnitude, and the policies adopted by successive governments.

The second paper deals with the situation in the rural sector whereby, in spite of high open unemployment, the countryside has undergone a silent revolution replacing traditional factors of production by machines and tractors, wiping out job opportunities for the rapidly growing population.

8. Impact of Grant Supported Activities in Achieving Grant Purpose

The purpose of the grant was to increase the capacity of the faculty in agricultural economics to respond to and understand the nature and character of economic problems encountered in the process of agricultural development in the LDC's. Funds spent have contributed both directly and indirectly to this end. At the margin it has allowed a much greater effort than would have been possible without this additional cash flow. Most of the funds have gone to support graduate assistants, the costs of research on real problems in the less developed countries and contributions to the publication of research results. In addition the grant has allowed us to bring to Ithaca visiting faculty and lecturers who presented seminars, and public lectures as well as working with students and faculty on specific research problems. The number of students carrying on graduate research and the number of additional faculty working on LDC problems has increased effectively during the period of the grant.

A. Department Faculty

The existence of grant funds to support graduate study and research by American students interested in economic problems of developing

countries and native students from LDC countries has provided a basis of involving an additional number of our faculty as teachers, graduate committee members, and directors of student projects. The small core staff with central responsibility for teaching and research in this area have been augmented and complemented by an increasingly knowledgeable faculty in marketing, farm management, finance, resource economics and public policy. They serve as major and minor advisers to graduate students. They provide critical review of research methodology, project statements and written summaries of research. They are a substantial part of the basic resources for the graduate program in international agricultural development.

B. College Faculty

The existence of research at a number of overseas locations has drawn on the resources and academic capability of scientists in other disciplines within the College as well as the permanent staff at the International Institutes, Universities and Research Centers. Joint planning of student research has influenced faculty activities. Teaching programs and seminars have helped to provide important interdisciplinary activity. The Barker visit in 1973-74 and the Lela visit in 1974-75 provide excellent examples of how the disciplines and selected faculty in agricultural engineering, agronomy, plant breeding, economics, sociology and political science contribute to each other in teaching and research. The central emphasis and thrust of the efforts here using 211(d) funds have been on graduate teaching and research in the LDC's.

C. Publications and Accumulated Research Information

Any research effort in an overseas location provides both student

and supervising faculty substantial insight and information about particular problems. Confidential survey data must be treated with circumspection. But contacts, basic country data, sources of factual information, evaluations of institutions and national organizations are cumulative and important. The existence of the 211(d) grant has made important contributions to this basic College and University fund of knowledge. In many respects this fund of information is hard to assess in direct quantitative terms. But it is important and real. The College's office of the Director of International Agricultural Development provides the coordinating mechanisms for the College as a whole. It is an effective and creative administrative office. In 1974-75 a new Director, Dr. Edwin B. Oyer replaced Dr. K. L. Turk. Our cooperative working relationships over many years made this transition easy and positive. We as a department use its resources and in turn contribute to many other students and faculty from other departments and disciplines. Centers of excellence concerned with problems of agricultural development in the less developed countries must rely on a slow but consistent process by which this accumulated knowledge is gained and then made available to students, faculty and other scientists.

One use of 211(d) grant funds has been to finance publication of research reports based on M.S. or Ph.D. theses which would not have been published otherwise. In a number of cases these reflect studies financed in part by national governments where fellowships or grants provide no money for this final step in the research process. The interchange of publications between 211(d) recipient universities has provided valuable and timely additions to faculty and student libraries as well as University libraries.

D. Graduate Research Overseas

The grant has made it possible during the past five years to make certain that every Ph.D. student with a major interest in LDC problems could be financed from a wide variety of sources for overseas research on worthy projects. This is an institutional capability which has been critical to both students and faculty. It has provided a mechanism to assure a displaced Ugandan student, Fred M. Rukandema, a means to complete his graduate studies with a return to professional work in East Africa. This is in the long run one of the true tests of our nation's commitment to improving the research and technical capacity of LDC nationals who are committed to work on LDC problems in their own environment.

When this grant ends in 1976 there will be no apparent mechanism to continue this fundamental base for directed field research overseas. The potential loss to LDC students is substantial both in terms of knowledge and experience. Moreover the field research data generated under supervision in LDC locations will not be available to local research personnel. Continuing contacts at overseas locations will be more difficult.

9. Utilization of Institutional Response Capability in Development Programs

A. It has not been the practice of the Department of Agricultural Economics to develop or require a formalized and systematic procedure for listing requests for assistance received either by individual, by the Department Chairman, by the College, or referred to the Department by professionals in a variety of locations. As a consequence we have not prepared table III A and table III B as requested for the academic

year 1974-75. Any such effort to reconstruct the years' letters, telephone calls and discussions would be incomplete, however we might try to develop the listing.

In the space below we list visits by faculty members to overseas locations during the period July 1, 1974 to June 30, 1975, the purpose of their visit and source of sponsorship or funding.

Brunk, Max E.

Australia, New Zealand, Philippines, Japan. August 1974 - September 1974. Led two nationwide seminars regarding the livestock industry and international trade in agricultural products. Participated in conferences with Australian Wheat Board, Australian Wine Council, Australian Meat Board. All sponsored by beef interests in Australia.

Forker, Olan D.

Turkey. February 1975. Supervise the research program and thesis effort of Fahri Unsal. Sponsored by Cornell IAD Program, Ford Foundation grant to the College.

Freebairn, Donald K.

Mexico. December 1974 - February 1975. Plan and conduct field research with colleagues in Mexico. Funded by Cornell University and Rockefeller Foundation.

Dominican Republic, Puerto Rico. January 1975. Instructor for International Agriculture Course (I.A. 602).

Mellor, John W.

Ethiopia. June 27 - July 7, 1974, May 11 - 24, 1975. Evaluate the ADA District Development Project and strategies of agricultural development in general with personnel from the Ministry of Agriculture, Government of Ethiopia and US/AID Mission personnel. Sponsored by US/AID.

Mellor, John W. (continued)

England. September 9 - 19, 1974. Present paper, "Economic and Social Implications and Choices Related to Change in Agricultural Technology", at the Second International Seminar on Change in Agriculture.

Thailand. December 30, 1974 - January 10, 1975. Consult with personnel, Ministry of Agriculture, Government of Thailand and US/AID Mission personnel to appraise the sericulture project and redesign new settlement projects.

Thailand. August 20 - 23, 1974. Organize and participate in a seminar jointly sponsored by Southeast Asia Development Advisory Group of the Asia Society in cooperation with the Mekong Committee on the Interaction of Planning and Implementation for Rural Development in the Mekong Basin.

Mudahar, M. S.

India. February 7 - 8, 1975. Present paper, "Agricultural Growth Processes and Strategies: A Few Observations", at the Symposium on Indian Agriculture in Retrospect and Prospects at the time of Silver Jubilee Celebration of the College of Agriculture, Punjab Agricultural University, Ludhiana.

In addition a number of faculty and staff participated in special conferences, workshops or programs with an important component of work related to agricultural development problems. This listing includes:

Mellor, John W.

June 25, 1974. Present paper, "Population, Resources and Jobs", at the Seminar on Agricultural Policy, Foreign Development Division, USDA, Washington, D. C.

Mellor, John W. (continued)

July 10, 1974. Present paper, "Technology to Increase Food Supply", at the Seminar entitled, "Hunger and Population: Potential Impact of Technology on the Prevention of Worldwide Food Shortages", sponsored by the Committee on Public Engineering Policy, National Academy of Engineering, Washington, D. C.

September 24, 1974. Present testimony, "Agricultural Production and Development in South Asia", to the Sub-Committee on the Near East and South Asia of the Committee on Foreign Affairs, House of Representatives, U. S. Congress, Washington, D. C.

October 25, 1974. Present paper, "Agricultural Price Policy and Income Distribution", International Bank for Reconstruction and Development, Washington, D. C.

October 29-30, 1974 & June 23-25, 1975. Lecture on "Agro-Industrial Development and Growth Linkages", U. S. Department of Agriculture Graduate School, Washington, D. C.

November 10-11, 1974, Seminar for Center for International Studies;

November 22, 1974, International Workshop for Center for International Studies;

March 5, 1975, Conference on Science and Technology Policy in the Developing Nations with Special Reference to the Industrial and Agricultural Sectors; all three activities within Cornell University.

November 13-16, 1974. Participate in the Wingspread Conference entitled, "Social and Cultural Consequences of Population Growth in India", sponsored by the Asia Society and the Johnson Foundations, Racine, Wisconsin.

Mellor, John W. (continued)

December 2-4, 1974. Participate in conference, "Prospects for Growth of Rural Societies: With or Without Active Participation of Women", sponsored by the Agricultural Development Council, Princeton, N.J.

December 4-5, 1974 & June 16-17, 1975. Lecturer, Foreign Service Institute, Department of State, Washington, D. C.

January 26-29, 1975. Present paper, "Relating Research Resource Allocations to Multiple Goals", at the Conference on Resource Allocation and Productivity in International Agricultural Research, sponsored by the Agricultural Development Council, Airlie House, Virginia.

February 20-21, 1975. Participate in conference on China's Agriculture and Economic Development, sponsored by the Committee on Scholarly Communication with the People's Republic of China, National Academy of Sciences, Washington, D. C.

April 17, 1975. Present testimony on "Food Aid and Agricultural Development", to the Sub-Committee on Foreign Agricultural Policy of the Committee on Agriculture and Forestry, United States Senate, Washington, D. C.

April 28, 1975. Present seminar on "Rural Technology and Employment", at the International Manpower Seminar on "Rural Employment and Poverty", U. S. Department of Labor, Washington, D. C.

Mudahar, Mohinder S.

July 24-26, 1974. Present paper, "Dynamic Analysis of Direct and Indirect Implications of Technological Change in Agriculture - The Case of Punjab, India", at the annual conference of the Western Agricultural Economics Association, Univ. of Idaho, Moscow, Idaho.

Poleman, Thomas T.

January 6-10, 1975. Presented paper, "The Measurement of Energy Flow Through Intensive Agricultural Systems", at the Institute of Ecology (TIE) Workshop on "Energy Flow and its Measurement Through Non-Industrial Societies", University of Florida, Gainesville, Fla.

Robinson, Kenneth L.

June 22-28, 1975. Participate in the Research Conference on Asian Fertilizer Demand and Marketing, sponsored jointly by the East-West Center and the Agricultural Development Council, Inc., Honolulu, Hawaii.

During the last year Dr. Robinson has served as a consultant to the National Science Foundation to review a joint Harvard-MIT project dealing with the world food problem and food aid.

Schulthois, Michael J.

October 31 - November 2, 1974. Presented paper, "Economics and Economic Research in Uganda During the Amin Period", at the African Studies Association Conference, Chicago, Illinois.

B. In the annual report for this grant prepared in August 1974 a rather complete listing of graduate students and their current professional responsibilities was presented on pages 68 - 76 in a section with a similar title. Earlier in this report are listed graduate students, their country of origin and degree program.

As was true for the preceding section it has not been department practice to maintain a log of all visitors to this campus from overseas or other parts of the United States who are concerned with issues in international agriculture. There is a steady interchange. The College's Director of International Agricultural Development maintains

an international visitors office to help coordinate and handle visitors and their needs. The numbers are substantial and their records do not include the many visits involving direct arrangements between scientists at other institutions and those here within a department.

One or two examples of new developments may be appropriate. The Tamil Nadu Agricultural University, India, has received a grant from the Ford Foundation to improve its competence in agricultural economics. The Vice Chancellor of the University and the Head of the Department visited Cornell as well as some other American land grant universities during the spring 1975. It is their plan to send one current junior faculty member here for Ph.D. course work which will be applied to a doctorate granted by Tamil Nadu. One of our faculty will be designated for each such degree candidate to help in directing research in India. The first such graduate student is now here in residence.

A joint research effort on the evaluation of new varieties of maize at CIMMYT has been undertaken by six departments at Cornell and the professional staff at CIMMYT. Currently one Ph.D. student in agricultural economics is located in Mexico with colleagues from plant breeding, biometrics, agronomy, entomology and plant pathology. This major effort is funded by CIMMYT, Cornell, Rockefeller Foundation and two national government fellowship programs - Malaysia and Norway.

Some of the most important use of research materials generated using 211(d) grant funds are difficult to document. This refers to the impact of field data and records on programs of the institutions or agencies where work is done overseas. In Nepal Professor Sisler has directed two studies where Ph.D. students have returned from the field and analysis of data is now in process. However, the impact of the work

in the field was evident even while the study was in process. Enumerators from the host institution were provided training and field experience. Initial processing of field data was supervised at a host location. A combination of teaching and consulting was provided on a regular basis with Nepalese staff and government officials. Preliminary results were shared with appropriate co-workers.

One of the great advantages of field research in an LDC which is jointly sponsored by a university or government institution is the interaction resulting from the study on our faculty and students and the professionals with whom they work. In many cases this may have more utility and more impact than a published report. It is unusual today to leave an LDC and not be assured that a complete set of the original data collected in a research project is not left with the local sponsoring institution. If this were not the case there would be less likelihood of future joint working relationships.

In Indonesia at Gadjah Mada University, in Nepal at two locations, in Nigeria at both Ife and Amadu Bello, in Uganda at Makerere University, currently at the Institute of Development Studies in Kenya, in Turkey and Iran at the respective ministries of agriculture there has been an important addition to technical competence and factual knowledge in agricultural economics. This is the often unreported, under-emphasized result of joint work which is fundamental to technical assistance and the development process.

In this context it may be useful to note that part of the analysis of basic data used in the recent 1975 International Rice Research Institute publication, "Changes in Rice Farming in Selected Areas of Asia", was funded by 211(d) grant funds. "Studies of each area were

prepared and are presented in the following chapters. In addition, data from each of the sites were provided to staff of the Department of Agricultural Economics of IRRI and analyzed by them both at IRRI, Cornell University, and at the Stanford Food Research Institute. Computer analysis at Cornell was financially supported through a 211(d) grant provided by the United States Agency for International Development." While Dr. Barker was at Cornell teaching a new course in production economics directed toward graduate students in applied biology, he completed important parts of the basic analysis reported in the book and presented in the course. He has thoughtfully acknowledged this support from US/AID in the introduction.

10. Next Year's Plan of Work and Anticipated Expenditures

The 1975-76 year will be the final year for the 211(d) grant in Agricultural Economics at Cornell. A budget and discussion of the individual items included in it was presented earlier to US/AID for review and general approval before making the one year extension of the grant. The intent is to provide resources to continue the graduate teaching and research programs of students supported in previous years under 211(d) funding. Funds listed below will cover graduate student stipends, field research expenses and support for publications planned to report results of research.

Proposed Budget and Planned Expenditures
July 1, 1975 - June 30, 1976

Planned Expenditures

I. Salary and support funds for Mrs. Judith Kramer, Research Specialist working for D. G. Sisler in support of research in international trade - Agricultural Experiment Station Project 121-449

A. Salary	\$12,900
B. Support (computer use, data retrieval, supplies)	500
Total	<u>\$13,400</u>

II. Graduate Training - Assistantship salaries, University fees, computer expenses, publications, and overseas support where appropriate

A. Peter Matlon, citizen of the United States. Completion of dissertation and publication based on field research in Nigeria (D. G. Sisler, thesis adviser)

1. Assistantship & University fees (9 months)	\$ 3,600
2. Computer expense	900
3. Publication expenses	<u>1,000</u>
Total	<u>\$ 5,500</u>

B. Peter Calkins, citizen of the United States. Completion of dissertation and publication based on field research in Nepal (D. G. Sisler, thesis adviser)

1. Assistantship & University fees (3 months)	\$ 1,000
2. Computer and supplies	500
3. Publication expenses	<u>1,000</u>
Total	<u>\$ 2,500</u>

C. Veit Burger, citizen of Austria. Completion of dissertation and publication based on field research in Nepal (D. G. Sisler, thesis adviser)

1. Assistantship & University fees (12 months)	\$ 4,600
2. Computer and tabulation	<u>1,000</u>
Total	<u>\$ 5,600</u>

D. Gillian Hart, citizen of South Africa. Support of field research in Jogjakarta, Indonesia (J. W. Mellor, thesis adviser)

1. Field expenses (supplies & enumerators' salaries)	<u>\$ 6,000</u>
Total	<u>\$ 6,000</u>

Travel expenses to Indonesia and return were included in the 1974-75 budget.

Planned Expenditures

II. (continued)

E. Fred Rukandema, citizen of Uganda. Support of field research at the Institute for Development Studies, Nairobi, Kenya (K. L. Robinson, thesis adviser)

1. Assistantship overseas	\$ 4,000
2. Field research expenses (supplies & enumerators' salaries in Kenya)	5,000
3. Tabulation and data analysis	1,000
Total	<u>\$10,000</u>

Travel expenses to Kenya & return were included in the 1974-75 budget.

F. Fahri Unsal, citizen of Turkey. Completion of coursework and dissertation at Cornell based on field research in Turkey (O. D. Forker, thesis adviser)

1. Assistantship & University fees (9 months)	\$ 3,600
2. Computer and tabulation	600
3. Publication expenses	800
Total	<u>\$ 5,000</u>

III. Publications - Publication of research results of four graduate students whose research was completed prior to July 1, 1975. Gregory Lassiter, Michael Schultheis, John Staatz, and Ram Yadav completed their research under the auspices of the original 211(d) grant.

Publications and mimeographed reports \$ 2,000

GRAND TOTAL \$50,000

11. Involvement of Minority Personnel and Women

During all the years of the 211(d) grant at Cornell funds have been used to cover the salaries of:

- A. Graduate assistants working on advanced degrees
- B. Visiting professors usually brought to Cornell to lecture for one term and work with faculty and graduate students
- C. A research specialist to work with Dr. D. G. Sisler and his students on problems of international trade and related issues.

During 1974-75 the salaries reported in table II B included:

- A. 3 of the 5.5 months of visiting faculty for a woman economist, Dr. Uma Lele
 - B. 1.5 of the 5.5 months of visiting faculty for Dr. D. Narain, a male citizen of India
 - C. 12 months of research specialist time for Mr. J. Kramer, a woman
 - D. There were 11 different graduate assistants funded from the 211(d) grant for different periods depending on teaching assignments, completion of degree programs and availability of alternate fellowships. Of this group 5 were male U. S. citizens, 1 was a female foreign national, and 5 were male foreign nationals.
- A number of individuals were employed overseas as enumerators in field locations. These were all foreign nationals chosen by project leaders and co-sponsoring host institutions.

Table I

Distribution of 211(d) Grant Funds and Contributions From Other Sources of Funding*

Review Period 7/1/74 to 6/30/75

Grant Related Activities	211(d) Expenditures			Projected to End of Grant	Non 211(d) Funding ** Amount (1974-75)
	Period Under Review	Cumulative Total	Projected Next Year		
Research	\$70,744	\$198,380	\$53,116	\$251,496	\$250,000
Teaching	10,860	28,993	4,007	33,000	150,000
Libraries	—	—	—	—	30,000
Mission Payments (Research)	(-)1,215	2,872	—	2,872	—
Consultation	—	1,632	—	1,632	—
Other	—	775	225	1,000	30,000
TOTAL	\$80,389	\$232,652	\$57,348	\$290,000	\$460,000

* These figures are best estimates.

**Includes other US/AID projects.

Table II-A

211(d) Expenditure Report

Actual and Projected Summary

Under Institutional Grant #AID/csd-2823

Review Period 7/1/74 to 6/30/75

Line Items (to conform to budget in Grant document)	Expenditures to Date		Projected Expenditures	Total
	Period Under Review	Cumulative Total		
Salaries	\$48,100.63	\$134,059.20	\$39,941	\$174,000
Travel	1,508.09	17,584.09	2,416	20,000
Equipment (Leases & Rentals)	--	1,079.94	120	1,200
Other	3,388.46	9,250.53	2,749	12,000
Overseas Research Expenses	19,511.39	42,019.05	4,281	46,300
Mission Payments	(-)1,215.26	2,872.23	128	3,000
Computers	1,076.01	5,532.42	1,967	7,500
Printing	3,402.30	7,331.38	2,669	10,000
Tuition & Fees	<u>4,617.50</u>	<u>12,923.17</u>	<u>3,077</u>	<u>16,000</u>
Total	\$80,389.12	\$232,652.13	\$57,348	\$290,000

Table II-B

211(d) Expenditure Report

Reporting Year Detail

Under Institutional Grant #AID/csd-2823

Reporting Period July 1, 1974 - June 30, 1976

I. Salaries:

<u>Faculty</u>	<u>Time</u>	<u>Dollars</u>	
Barraclough, S.	1 week	391.24	
Lele, U.	3 months	5,824.09	
Narain, D.	1.5 months	<u>2,581.87</u>	8,797.20
<u>Other Professional</u>			
Kramer, J.	12 months	11,386.13	11,386.13
<u>Graduate Assistants</u>			
Burger, V.	12 months	4,291.43	
Calkins, P.	4 months	1,359.16	
Ender, G.	6 months	1,901.38	
Goldman, R.	6 months	1,802.97	
Hart, G.	9 months	2,873.70	
Karunasekera, M.	5 months	1,642.02	
Matlon, P.	12 months	4,887.80	
Rukandema, F.	5 months	1,525.59	
Schultheis, M.	7 months	2,397.34	
Unsal, F.	12 months	3,506.86	
Yadav, R.	5 months	<u>1,592.93</u>	27,781.18
<u>Clerical</u>			
Biamonte, D.	1 week	<u>136.12</u>	136.12
<u>Other</u>			
Fees and Tuition		<u>4,617.50</u>	<u>4,617.50</u>
TOTAL SALARY EXPENSE			52,718.13

Table II-B (cont.)

II. <u>Student Research Support:</u>			
	<u>Name</u>	<u>Location of Study</u>	<u>Dollars</u>
	Burgèr, V.	Nepal	4,663.17
	Calkins, P.	Nepal	3,849.98
	Hart, G.	Indonesia	500.13
	Matlon, P.	Nigeria	5,934.71
	Rukandema, F.	Kenya	4,396.08
	Schultheis, M.	Uganda	<u>167.32</u>
			19,511.39
III. A. Consultants - none			
B. Guest Lecturers, visitors, etc. - none			
IV. <u>Travel:</u> (all domestic, no foreign travel)			
	<u>Faculty Member</u>	<u>No. of Trips</u>	<u>Cost</u>
	Hughes, C.	1	20.38
	Lele, U.	1	161.23
	Narain, D.	1	132.00
	Sisler, D.	3	461.19
	Stanton, B.	5	<u>733.29</u>
			1,508.09
V. <u>Equipment</u> - none			
VI. <u>Library Acquisitions:</u>			<u>27.60</u>
			27.60
VII. <u>Publications:</u>			
	3,440 copies of "The Food Balance Sheet As A Parameter of Tropical Food Economies: The Case of Mauritius". by Emmy Bartz Simmons and Thomas T. Poleman		3,379.00
	Miscellaneous printing costs		<u>23.30</u>
			3,402.30
VIII. <u>Miscellaneous:</u>			
	Communications and Supplies		2,743.01
	Computers		1,076.01
	Leases and rentals		92.00
	Meeting expenses		387.23
	Mission payments		28.18
	Repairs		<u>110.44</u>
			4,436.87
IX. <u>Credited to Account:</u>			
	Credit reversal of Mission payment		-1,215.26
			<u>-1,215.26</u>
TOTAL EXPENSES, July 1974 - June 30, 1975			<u><u>80,389.12</u></u>

Publications

Brunk, M. E.

- ✓ "Serving Your Customers", Australian Journal of Agriculture, pp. 278-80, September 1974.
- ✓ "Beef Problems Will Perpetuate", Australian Journal of Agriculture, pp. 245-46, August 1974.
- ✓ "Markets Are Not A Right", Australian Poultry Farmer, p. 7, October 1974.

✓ Desai, Gunvant M. & Schluter, Michael G. G.

- ✓ "Generating Employment in Rural Areas", Occasional Paper No. 73, Department of Agricultural Economics, Cornell University - US/AID Employment and Income Distribution Project, June 1974.

✓ Donovan, W. Graeme

- ✓ "Employment Generation in Agriculture: A Study in Mandya District, S. India", Occasional Paper No. 71, Department of Agricultural Economics, Cornell University - US/AID Employment and Income Distribution Project, June 1974.

Mellor, John W.

- ✓ "Models of Economic Growth and Land-Augmenting Technological Change in Foodgrain Production", in Nurul Islam (ed.) Agricultural Policy in Developing Countries, London: The Macmillan Press, Ltd., 1974, pp. 3-30.
- ✓ "Population, Resources and Jobs - A Summary Statement", Occasional Paper No. 77, Department of Agricultural Economics, Cornell University - US/AID Employment and Income Distribution Project, July 1974.
- ✓ "Technology to Increase Food Supply", World Hunger: Approaches to Engineering Actions, Report of a Seminar, National Academy of Sciences, Washington, D. C., 1975, pp. 15-25.
- ✓ (book review) "To Create A Modern Agriculture - Organization and Planning", by A. T. Mosher, Agricultural Development Council, Inc., New York, New York 1971 and "Economic Analysis of Agricultural Projects", by J. Price Gittinger, The John Hopkins Press, Baltimore, Maryland, 1972 in Journal of Economic Literature, Vol. XII, No. 1, March 1974, pp. 136-38.
- ✓ (book review) "Dualistic Economic Development", by Allen C. Kelley, Jeffrey G. Williamson, and Russell J. Cheetham, in American Journal of Agricultural Economics, Vol. 56, No. 4, November 1974, pp. 849-50.

Mellor, John W. & Mudahar, Mohinder S.

- ✓ "Modernizing Agriculture, Employment and Economic Growth: A Simulation Model", Occasional Paper No. 75, Department of Agricultural Economics, Cornell University - US/AID Employment and Income Distribution Project, June 1974.
- ✓ "Simulating a Developing Economy with Modernizing Agricultural Sector: Implications for Employment and Economic Growth", Occasional Paper No. 76, Department of Agricultural Economics, Cornell University - US/AID Employment and Income Distribution Project, June 1974.

Mudahar, Mohinder S.

- "New Analytical Tools in Agricultural Economics: Discussion", in (ed.) K. Hunt, The Future of Agriculture: Technology, Policy and Adjustment, Oxford Agricultural Economics Institute for International Association of Agricultural Economists, London, 1974, pp. 192-94.
- ✓ "Dynamic Analysis of Direct and Indirect Implications of Technological Change in Agriculture - The Case of Punjab, India", Occasional Paper No. 79, Department of Agricultural Economics, Cornell University - US/AID Technological Change in Agriculture Project, December 1974.

Mudahar, Mohinder S. & Day, Richard H.

- "A Generalized Cobweb Model for an Agricultural Sector", MRC Technical Summary Report #1453, Mathematics Research Center, University of Wisconsin - Madison, August 1974.

Mudahar, Mohinder S. & Johl, S. S.

- "The Dynamics of Institutional Change and Rural Development in Punjab, India", RLG No. 5, Rural Development Committee, Center for International Studies, Cornell University, November 1974.

Poleman, Thomas T.

- ✓ "The Measurement of Energy Flow Through Intensive Agricultural Systems", Cornell University, Agricultural Economics Staff Paper No. 75-1, January 1975.
- ✓ "World Food: A Perspective", Science Vol. 188, No. 4188, May 1975, pp. 510-18.

Schluter, Michael G. G.

- ✓ "Interaction of Credit & Uncertainty in Determining Resource Allocation and Incomes on Small Farms, Surat District, India", Occasional Paper No. 68, Department of Agricultural Economics, Cornell University - US/AID Employment and Income Distribution Project, February 1974.

Schluter, Michael G. G. & Mount, Timothy D.

- ✓ "Management Objectives of the Peasant Farmer: An Analysis of Risk Aversion in the Choice of Cropping Pattern, Surat District, India", Occasional Paper No. 78, Department of Agricultural Economics, Cornell University - US/AID Employment and Income Distribution Project, October 1974.

Schluter, Michael G. G. & Parikh, Gokul O.

- ✓ "The Interaction of Co-operative Credit and Uncertainty in Small Farmer Adoption of the New Cereal Varieties", Artha-Vikas, Vol. XI, No. 2, July 1974, pp. 31-49.

Schultheis, Michael

- ✓ "Economics and Economic Research in Uganda During the Amin Period", Cornell University, Agricultural Economics Staff Paper No. 74-27, October 1974.

Shortlidge, Richard L., Jr.

- ✓ "The Labor Market for Agricultural Graduates in India: A Benefit-Cost Case Study of G. B. Pant University of Agriculture and Technology", Occasional Paper No. 69, Department of Agricultural Economics, Cornell University - US/AID Employment and Income Distribution Project, April 1974.

Sisler, Daniel G.

- ✓ "The World Food Situation - What is the U. S. Role?" Cornell University, Agricultural Economics Staff Paper No. 75-7, March 1975.