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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 9/30/76 Amount of Grant: \$290,000.00
Expenditures for Report Year: \$57,347.83 Accumulated: \$290,000.00

B. Narrative Summary:

Funds from the 211(d) grant in agricultural economics at Cornell University have been used primarily to support expansion in graduate teaching and research concerned with the problems of agricultural development in the less developed countries. Emphasis has been placed on agricultural markets and market systems, international trade, labor productivity, and the terms of trade between agriculture and other sectors.

During 1975-76 grant funds supported six full time Ph.D. students either doing dissertation research overseas in Kenya, Nepal and Indonesia or in completing their analysis and writing theses and final research reports in Ithaca. Professors D. G. Sisler, O. D. Forker and K. L. Robinson supervised and directed the respective research projects. Two projects continue in cooperation with the Institute for Development Studies and Ford Foundation in Kenya and with Gadja Mada University and the Agricultural Development Council in Indonesia using alternate funding sources.

Nearly all of the doctoral students supported during the six years of the grant are actively working professionally overseas or in closely related work in less developed countries. This may be one of the most important tangible benefits from the program. They serve in a variety of key roles: executive officer in an agricultural development bank, economist in a national planning commission, economist at one of the international agricultural centers, economists employed by Rockefeller and Ford Foundations located at universities in less developed countries, economist with the Agricultural Development Council, university lecturers in agricultural university or institutes within their own countries.

Graduate teaching was enriched by the presence of Dr. Dharm Narain, Agricultural Prices Commission of India, who served as a visiting professor and research fellow. He directed a seminar in agricultural development during the spring semester 1976 with primary emphasis on agricultural price policy in developing countries. With his assistance a special seminar was also organized on price policy for US/AID economists and research workers at the university and other cooperating institutions. Over the six years of the grant at least one visiting scientist has been in residence for a semester each year. Primary emphasis has been given to agricultural development issues in South and Southeast Asia. Two new graduate courses or seminars were developed during this period. Dr. D. G. Sisler and Dr. David Blandford are offering a third new graduate course, Agricultural Trade Policy, in the fall semester 1976, reflecting both the research and training objectives of this grant.

DETAILED REPORT

I. 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 development economics in low-income countries. In particular, this grant made possible a graduate research and teaching program involving a significant focus on applied economic problems and field studies in developing countries. As a result of this program, the findings of research can be applied more directly and more quickly to existing problems in the countries involved. 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 has been of particular importance. It would not have been possible without the 211(d) grant since traditional funding sources are inadequate and lack the flexibility to provide support for overseas research. With the completion of this grant the opportunity to support doctoral dissertations and continuing research programs at selected overseas locations will necessarily be diminished at this university.

II. 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 participated or assisted 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.

C. Review of Critical Assumptions

Basic to the grant objectives is the assumption that relationships could be established between research centers and important institutions concerned with the process of agricultural development in overseas locations and the faculty and graduate students here at Cornell and

in other 211(d) grant holding institutions. This basic part of the program has been given high priority here and has helped to provide focus for location of overseas studies. There has been a strong desire to build a cumulative effect of having more than one project at the same location over a span of years. The nationality of graduate students and project interests have provided natural constraints to making this objective overriding. Nevertheless nearly all of the graduate research efforts were developed either within the graduate student's own country or in the case of Americans or Europeans, at locations where a faculty member had developed a research program in cooperation with local scientists and institutions. Such relationships have been established at IRRI, the Philippines, India, Nepal and Indonesia.

D. Cooperation with Other Universities Holding 211(d) Grants

Over the six years of the 211(d) grant there have been increasing efforts on the part of the six universities with support for work in 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 building linkages between staff and students at these institutions.

Faculty associated with each of the 211(d) grants have benefitted from meetings held during 1973-76 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.

III. Accomplishments

The first three objectives of the grant have received central attention from our faculty and are closely related. These additional funds made it possible for faculty and their graduate students to carry out significant research projects in less developed country locations. The impact on teaching and research is direct and stimulating. Both students and faculty are able to multiply this impact with other students and faculty at this institution and at the overseas locations where they work. It is difficult to measure the direct and indirect effects of these associations. Clearly the joint research efforts overseas have provided new stimuli in less developed country institutions. Field research has enriched the data base at the host institutions. It has provided opportunities to examine methodologies and hypotheses under local conditions. It has provided new insights for research staff in the less developed countries as well as for our faculty and students.

There is an important impact on all the graduate students in agricultural economics from having some of their colleagues working at overseas locations. A direct awareness of both opportunities and problems in the

development process is encouraged by conversation, slides, and seminars. We all learn when our friends and colleagues are actively involved in the research process. Often we get new insight into procedures which have applications in the United States as well. Although difficult to measure in specific terms, this grant has made some contribution to the graduate education of nearly all our students and faculty in an informal but meaningful way.

A. Graduate Teaching

A graduate teaching program in agricultural economics directed toward the needs of students concerned with agricultural development problems has evolved over the past 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 fall term 1975-76, Dr. Dharm Narain taught the graduate seminar on economic problems of agricultural development. His central concerns were on price and production policies and their implementation in less developed countries. Dr. Narain is Chairman of the Prices Commission in India and was a Visiting Professor of Agricultural Economics at Cornell University from May 1975 through April 1976. Some of the topics Dr. Narain covered 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.

During the past academic year Dr. Daniel G. Sisler and a new member of our faculty, Dr. David Blandford, developed the materials for a new graduate course, Agricultural Trade Policy. It will be offered regularly and is being taught for the first time in the fall semester 1976. The course deals with the rationale and methods of commodity trade policy. Topics included are the basic elements of trade theory and their heuristic relevance; the historic development of trade and international economic relations; agricultural trade policy in the economically developed nations; trade issues and policy in economically less developed nations; problems associated with the multinational firm; inter-government negotiation and cooperation; the rationale and analytics of commodity market management.

B. Graduate Student-Faculty Research Overseas

It is the basic objective of the Department to encourage every Ph.D. with a major in economic development or international agriculture to seek support for research on an economic problem in an overseas location. The 211(d) grant has helped to provide support for a number of such students. Often a combination of funding sources has been used to facilitate a more meaningful study than could have been developed from any single source of resources. Hence a cooperative venture with one or more agencies or institutions in the host country is developed. The Ph.D. student lives and works as part of a research organization in a location overseas, shares any primary data collected with the local institution and

completes research reports and a thesis when he returns to Cornell.

Basic data are tabulated whenever possible before leaving field locations. This allows farm management and price or marketing data to be used for other research locally, for teaching, or for locally based studies. It is an important component of research efforts in overseas locations to insure that data collected in the field are available and used by local scientists and research teams.

During the academic year 1975-76, funding from the 211(d) grant assisted in some measure in research associated with nine different graduate student thesis projects:

<u>Name</u>	<u>Country</u>	<u>Faculty Advisor</u>	<u>Funding Sources</u>
1. Burger, Veit	Nepal	D. G. Sisler	US/AID 211(d)
2. Calkins, Peter H.	Nepal	D. G. Sisler	Foreign Area Fellowship, Social Science Research Grant, US/AID 211(d)
3. Ender, Gary P.	Nepal	D. G. Sisler	Cornell University US/AID 211(d)
4. Hart, Gillian P.	Indonesia	J. W. Mellor	Foreign Area Fellowship, US/AID 211(d) US/AID contract
5. Lassiter, Gregory	Philippines	T. D. Mount	Cornell University IRRI US/AID 211(d)
6. Matlon, Peter J.	Nigeria	D. G. Sisler	Amadu Bello Univ. Rockefeller Found. US/AID 211(d)
7. Rukandema, F. Mwita	Kenya	K. L. Robinson	US/AID 211(d) Ford Foundation IDS - Kenya
8. Staats, John W.	Philippines	D. G. Sisler	Cornell University US/AID 211(d) IRRI

<u>Name</u>	<u>Country</u>	<u>Faculty Advisor</u>	<u>Funding Sources</u>
9. Unsal, Fahri	Turkey	O. D. Forker	Ford Foundation US/AID 211(d)

In each of these cases research directed toward one of a set of basic problems in a developing country has been furthered. The three projects in Nepal and an early study by Ram Yadav directed by Dr. Sisler add to faculty competence and knowledge about the complex problems of development in that country. One of the studies by Ender drew heavily on the field data collected by another student, Calkins. The project in Indonesia is the third in a series conducted with the assistance and cooperation of faculty at Gadjah Mada University and the Agricultural Development Council. The two projects using input-output data for the Philippines draw on a rich and important relationship and exchange between faculty at the University of Philippines, Los Banos, faculty at Cornell and scientists at IRRI. The project in Nigeria builds on cooperative work with faculty at Michigan State (Eicher) and at Kansas State located at Amadu Bello University. The project in Kenya renews relationships with scientists at the Institute of Development Studies, a cooperator having done his graduate study at Cornell. The study in Turkey builds on associations made by Dr. Forker during his assignment in Turkey funded by US/AID about five years earlier. Viewed as a whole these projects have complemented the research interests and contacts of our faculty. They have also helped to build upon earlier research efforts so that some cumulative effects on policy and programs within individual countries could be effected.

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

Nepal, 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 is 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.

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 which increased to 40 percent after a modification in the presentation of the questionnaire.

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 comprised all industries which sell directly to tourists, i.e., hotels, restaurants, lodges, travel agencies, curio shops. 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 WIDC for hotel construction, were collected whenever possible. Government revenues and expenditures, mainly capital expenditures for infrastructure, were collected from various government agencies.

Analysis of the expenditure patterns of various categories of tourists has been completed. Before the actual analysis could be carried out, three preliminary steps had to be performed. First, data from the approximately 1000 returns were punched on cards and checked for internal consistency. Coding and punching errors were corrected. Second, known

characteristics of international visitors to Nepal, e.g. age, type of hotel visited, length of stay by purpose, were compared with survey results to test for possible bias in the expenditure pattern of respondents. A very good agreement in these characteristics suggests that the various subsamples of the survey are indeed representative of their respective population groups.

Since some subsamples were underrepresented in the total sample, (overland arrivals were undersampled due to disproportionately higher sampling costs, or French visitors were underrepresented due to lower response rate from that group), a weighting scheme was devised to give each subsample its appropriate weight, in the entire sample.

Finally, a classification scheme to partition the sample into exhaustive and mutually exclusive groups had to be found. First, groups were formed such that the variation of the expenditure pattern within groups is minimized, while variation between groups is maximized. Second, groups so formed had to be easily identifiable. That is they should form recognizable target groups for policy considerations. For example, U. S. group travelers, staying in 5-star hotels would be a viable target group, whereas groups delineated by age or income are not as useful as policy targets.

All cases have been classified into the following: Indian - Non-Indians, the latter subdivided by purpose of visit into 4 subclasses: Pleasure tourists, individual trekkers, organized trekkers and business and official visitors. Pleasure tourists, forming the bulk of all visitors, have been further classified according to nationality and hotel category. A separate expenditure pattern was then calculated for each of the above

classes. These patterns conform to expected behavior; that is, the share of total expenditures spent for meals is inversely related with total expenditure per day. Between nations the lowest variation is found in expenditures for food, the largest variation for Curios and Handicrafts, which, even in the low expenditure classes, comprises a considerable proportion of the total.

The next step in the analysis is to construct a modified input-output table of technical coefficients from the data collected in the Industrial Input Survey. The impact of the various expenditure patterns by tourist classes on the balance of payments and the distribution of GDP over income classes will be calculated.

The sectoral analysis facet of the study allows an appraisal of the linkages between such activities as agriculture, handicrafts, and transportation to tourism. 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. Methods of eliminating "leakages" or activities where import substitution is economically viable and desirable will be suggested. This analysis will be completed by the end of 1976. Final write-up, revisions and thesis submission will be accomplished by March 1977. On completion of his dissertation Burger will return to Nepal as an economist with the Agricultural Development Council.

2. The Impact on Income, Employment, and Nutrition of Developing Horticulture in the Trisuli Watershed, Nepal - Peter H. Calkins and Daniel G. Sisler

The Government of Nepal has designated horticultural development as the engine for improving lifestyles in the middle hill region of Nepal, an area where population pressure and a deteriorating resource base make most imperative an effort to increase agricultural productivity. This study evaluates the government's program to foster horticultural development. For analytical purposes, horticulture was defined to encompass legumes, non-leguminous vegetables including tubers, and fruits. Vegetable crops were divided into legumes and non-legumes because, although both fall under the commonly accepted rubric of horticulture, Nepalese hill farmers consider legumes to be a subsistence crop like grain, while vegetable production is pursued only after subsistence needs have been met.

Nuwakot District was selected to represent the middle hill region of Nepal because it embodies a wide range of microclimate and soil types, typically low levels of horticultural production, yet a great potential for further development inherent in the recently-established power and transportation network. Three study areas, called landbases to reflect their differing resource capabilities, were selected for investigation. Each landbase encompassed altitudes of 1,700-6,500 feet, in order to span tropical to temperate growing conditions and to measure the relative profitability of growing fruits and vegetables under these conditions.

The standard of living is viewed as consisting of income, employment, and nutritional components. It was in terms of these components that the following six objectives for the study were enumerated.

1) To describe present production activities in six villages of the Nepalese hills and the levels of income, employment, and nutrition flowing from them.

2) To estimate the contribution of horticulture to nutrition, employment, and income in these villages.

3) To determine the main barriers to increase production and consumption of horticultural commodities.

4) To suggest means of relaxing these barriers.

5) To compute the optimal mix of production activities under a variety of assumptions for four farms representative of key ecological zones in the middle hills, and

6) To compute the levels of income, employment, and nutrition associated with the optimal production mixes.

The information gathered in meeting these objectives was used to test seven hypotheses. The hypotheses were tested through statistical and linear programming analyses of data obtained from two types of surveys. A "general" survey was used to interview 200 farmers in each study area to establish, through summary statistics and regression analysis, the present patterns of production, consumption, trade and motivation of the farmers in Nuwakot District. A "daily" survey involved interviews with a 40-farmer subsample of the original 600 farmers; linear programming analysis based on data from this daily survey was used to determine how income could be maximized under six sets of conditions.

The findings of the study were:

1) Increases in the standard of living will result from devoting more land, labor and capital to fruit and vegetable production. Hence,

a shift in farmer perspective from a grain-subsistence to a vegetable-intensive mentality is valid.

2) Only certain varieties of fruit and vegetables (potato, green-beans, rape seed, radish, okra, silam, ginger and chili) will be earmarked for increased production. Of these eight varieties, potato and rape appear in three of four ecological-income zones and greenbeans appear in two. This suggests that these crops outyield others over a wide range of soil, micro-climate and factor combinations. Intensified research into a limited number of historic vegetable varieties is a feasible avenue to horticultural development.

3) Horticultural specialization does not contribute to reducing seasonal redundancy of labor; the prospects for releasing household members to pursue year-round non-agricultural employment are not as good as in the historic case.

4) Horticultural crops, whether produced or purchased, are critical to meeting adequate levels of nutrition; the contribution of legume, green leafy vegetable, tuber, gourd, and fruit products to the diet is considerable.

5) Plans for horticultural development in the hills can both benefit small farmers and improve the distribution of income. The fact that the absolute and relative income of the tropical farm declines in the long run is evidence that the level of nonlabor resources is so low that there is little that can be done to ensure rising incomes if nutritional adequacy is also required. There are, however, high levels of underemployed labor. Hence, off-farm employment or other sources of income-supplementation for poorer farmers seem in order if the government wishes to augment the generally favorable income-distributional effects of horticultural specialization.

6) Data were inconclusive to adequately test the hypothesis that, regardless of the quality of the landbase, proximity to market constitutes an impetus to agricultural development (as proposed by T. W. Schultz). The available data show that proximity to market overrides the impact of elevation, and that level of cash involvement in the economy and the investment of labor in off-farm employment were negatively correlated with distance from market. Factors complicating the testing of this hypothesis are the quality of the landbase, size of holdings and unavailability of observations from many villages lying in concentric circles around the market. Nevertheless, the available data show a definite locational impact of proximity to the Kathmandu market on the level of commercialization and specialization; the data suggest that the proliferation of market outlets and sources of information is a vital part of the development process and serves as an impetus to the acceptance of the specialized horticultural cropping patterns developed in the study.

7) Within-district or intra-hill trade will offer at least as viable a comparative advantage exchange as the hill-plains integration strategy forwarded by the government.

In each of the four zones studied, there are specific horticultural crops and varieties which are profitable and nutritious enough to warrant the devotion of more land, labor, and capital to their production. In the face of population pressure and occasional famine in the Nepalese hills, horticultural development can provide a solution to improving the levels of well-being and equalizing the output per farm worker in the hills and the terai. Thus, as horticultural development elevates the well-being trident (income, employment, and nutrition) for hill-dwellers, it

may well point the way to equitable and balanced growth of the Nepalese economy as a whole.

Dr. Calkins, after completing his doctoral dissertation, accepted employment as economist at the Asian Vegetable Research and Development Center, Taiwan.

3. The Importance of Food Legumes in Nutrition and Farming in the Hills of Nepal - Gary P. Ender and 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 shattered* 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 thought to be important in production decision, 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.

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

The thesis was completed and presented to the Graduate School in May 1976. The thesis catalyzed interest which has led to a broader research proposal in the area of legumes which has now been funded by the Rockefeller Foundation. Ender is now in Nepal starting with field studies on a project directed by Dr. Sisler. Faculty at Tribhuran University are cooperating.

4. An Analysis of the Interaction Between Economic and Welfare Factors in Labor Supply Decisions - Gillian P. Hart and 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 im-

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 inter-relationships 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.

Data from a sample of 90 households in a Javanese coastal village were collected on a monthly basis between October 1975 and October 1976 concerning labor allocation and incomes received for every individual in the household over the age of six. At the household level, monthly data were also collected on non-labor income, consumption expenditure, borrowing, lending and saving. Inventories were taken before the monthly records started and again at the end of the year of records.

Farm management surveys describing cropland use, output and inputs, technology used were taken for these households for the 1975 dry season, the 1975-76 wet season and the 1976 dry season.

In cooperation with the faculty of Medicine, Diponegoro University, detailed time allocation and food intake data were collected during June-July 1976 from households in the original survey with children under the age of 3 years. Anthropometric measurements and clinical examinations of the children so studied were made.

Original data from these surveys has been coded punched on tape, checked and verified. Analysis and summary is now in process. Hart prepared a paper in Indonesia before returning to the United States, "Some Structural Characteristics of Three Javanese Coastal Villages," January 1976. A paper to be published in Masyarakat Indonesia (Journal of the Indonesian Institute of Science) has been prepared. It is "Labor Allocation, Income and Consumption in a Javanese Coastal Village," April 1976. In August 1976 Hart participated in the Agricultural Development Council Workshop on Household Studies in Singapore and presented a paper, "The Survival Strategy of Labor Allocation."

Hart returned to Cornell in November 1976 and is completing her analysis and writing her doctoral dissertation. Funding for her continuing work is now provided by USAID/ta-c-1327.

The Factor Proportions Theory and the Pattern of International

Trade - Gregory C. Lassiter, Timothy D. Mount and Daniel G. Sisler

The link between specialization, trade, and economic development has been emphasized by economists since the days of Adam Smith. Yet the early theories of international trade are 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 factor proportions or Heckscher-Ohlin theory is the first international trade theory to deal with this issue. It predicts that a country will have a comparative advantage in goods whose production intensively utilizes the country's relatively abundant factors of production. Yet despite the intuitive appeal and corresponding popularity of this trade theory, empirical test results have consistently failed to support its predictions.

The purpose of this study is to empirically test the factor proportions theory in light of recent research. The evolution of this theory is summarized with particular emphasis on reviewing its poor results in various empirical tests. The most notable of these is the test conducted by Wassily Leontief which demonstrated that the United States paradoxically exported labor intensive goods in 1947. In addition, criticisms of the theory and the methods used to test it empirically are discussed in detail. Finally, a multi-factor model of trade is developed. This model attempts to compensate for the most important criticisms of previous empirical tests by incorporating factors of production such as technology, skilled labor, and natural resources in addition to the two classical factors--capital and labor.

Two separate empirical tests of the multi-factor model are conducted-- the first on U.S. trade in 1948 and the second on Philippine trade in 1965. In each test, ordinary least squares regression is used to predict each sector's net export performance from the sector's total requirements of six factors of production--capital, research workers, professional workers, other workers, non-renewable natural resources, and renewable natural resources. An 81-sector input-output matrix for the U.S. and a 51-sector matrix for the Philippines were used to calculate the total (direct plus indirect) requirements of each factor of production used in these tests.

The results of the two tests of the multi-factor model were disappointing. In both cases the regression equations were poor predictors of an individual sector's trade performance and, more importantly, the signs of most of the regression coefficients were not consistent with the factor productions theory. Thus, the inclusion of additional factors of production fails to reverse the paradoxical relationship between trade and factor use that was found in previous empirical tests. In fact, additional paradoxical relationships are suggested by the multi-factor model, though their statistical significance is questionable. A variety of alternative, though less plausible, specifications of the multi-factor model are estimated, but they do not improve on the results obtained in the original model.

While the multi-factor model is an improvement over the more simplistic models previously used to test the factor proportions theory, there remain several underlying assumptions which could be violated in an empirical test. The most important of these are the assumptions of

homothetic preference, non-reversible factor intensities, and factor immobility.

Lassiter's thesis was presented to the Graduate School and his M.S. degree granted in May 1976. He is currently a doctoral candidate in agricultural economics at Cornell. His thesis chairman is Professor K. L. Robinson. Lassiter plans to return to Chad and the Sahel for his doctoral studies on the economics of irrigation and the allocation of scarce water resources in agriculture.

6. The Size Distribution and Structure of Personal Incomes Among Farmers in Northern Nigeria - Peter J. Matlon and D. G. Sisler

The objectives of this study can be divided into three sets:

1. To describe the size distribution of personal income among a sample of northern Nigerian farmers.
2. To analyze the "structure" of the income distribution. This includes:
 - a. To determine the demographic characteristics of income classes and the effect, if any, of age and dependency ratios on the earning capacity of farming households.
 - b. To determine the distribution and composition of assets ownership among distinct income classes.
 - c. To determine how levels of employment and sources of income vary with household incomes between farm and non-farm rural sectors.
 - d. To determine how cropping systems vary by income class with respect to 1) emphasis given to food and cash crops, and 2) techniques of production.
3. To examine the impact of a) government marketing board groundnut

pricing policies, and b) extension campaigns, on the observed distribution of income.

The data for this research was collected from a sample of 141 farmers in three villages in Kano State, Nigeria. The villages were selected on the basis of their size, proximity to market facilities, and the frequency of contact with agricultural extension agents.

During thirteen months of data collection, the following data components were obtained:

1. A farm management component including field-specific input-output data and an accounting of all agricultural expenditures and sales.
2. An accounting of all non-agricultural income earning activities identifying expenditures, sales, and off-farm service earnings and time engaged in these activities.
3. A credit component identifying the debt position of the household throughout the year regarding both cash and kind items and identifying the uses to which all cash loans are put.
4. A marketing component identifying seasonal price variations for all marketed produce, transport costs to sales destinations, and costs and perceived risks of storage.
5. A gift component identifying cash and kind gift flows between households.
6. A household expenditure component estimating non-production related cash purchases.
7. An inventory of all agricultural and non-agricultural production capital, storage facilities, and livestock holdings.
8. A subjective component exploring farmers' perceptions of crop prices, cropping priorities, crop-specific production risks, and familiarity

with and participation in government extension programs.

These data were collected by three enumerators, one living in each of the study villages. Interview frequency varied between three times weekly, and once for the entire survey depending upon the type of data and size of sample involved. A "large sample" of 105 households nearly equally divided between the study villages was interviewed on a monthly basis for most types of information, and once or twice during the year for additional subjective and inventory data. A "small sample" of 36 households, divided equally between the three villages and purposively selected from a larger random sample on the basis of information obtained in a situational survey, was interviewed two to three times each week to collect detailed data concerning field and job-specific farm labor activities, non-labor field inputs, non-farm labor activities and earnings, and household cash expenditures. Weekly interviews were administered to this small sample to collect production expenditure, sales, loan, gift and other kind and cash flow information. Monthly interviews with the small sample also provided data regarding land transfers and labor migration, whereas subjective interviews, inventories, and data checks, as with the large sample, were conducted once or twice during the year for each questionnaire.

The interviews were conducted continuously from April 1974 until May 1975. Generally cooperation was good, and it is felt that reliable data has been assembled on each component outlined above. All phases of field work, including a soils survey of the project area, were completed in August 1975. Matlon returned to Cornell in October of that year.

Analysis of the assembled data have involved tabular and graphic

analysis, correlation, analysis of variance and covariance and various regression techniques. Upon completion of the analysis, results will be presented as a Ph.D. dissertation, which is expected to be completed by February 1977.

Matlon, on completion of his degree requirements will join the faculty of Michigan State University and will continue his work in agricultural economics and development with emphasis on West African problems.

The impressive set of field data collected by Matlon and his research assistants in Northern Nigeria will provide much of the basic data for the doctoral dissertation of Eric Crawford who has had substantial field experience in Nigeria and West Africa before starting work on his doctoral studies at Cornell. His thesis will be directed by Professor K. L. Robinson.

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

This research project was initiated in 1975 and will terminate in 1977. It is being conducted in cooperation with the Institute for Development Studies, University of Nairobi. A grant from the Ford Foundation has been obtained for the period from July 1976 through July 31, 1977. A supplementary grant was necessary due to termination of the 211(d) program in agricultural economics at Cornell University.

Mr. Rukandema has initiated a series of studies with small farmers in sub-locations of the Kakamega District, Kenya. The project aims at identifying profitable production techniques that will significantly raise labor productivity and farm incomes in Kenya's small-scale agriculture.

An initial working paper has been prepared by Rukandema summarizing some results from his study. It is published as Working Paper 253 in the Institute for Development Studies series, dated December 1975 and is entitled, "Some Economic Arithmetic of Poverty: Preliminary Farm Data from Bukura and Shitoli Sub-Locations of Kakamega District, Western Kenya."

Analysis of the preliminary data from 42 households involving 299 family members in Shitoli and 42 households in Bukura involving 263 family members provides insight into the nature and problems associated with widespread poverty in this densely populated agricultural region of Kenya. Population pressure on the land is substantially greater in Shitoli where 57 percent of the sample farms are managed by women and 52 members of the 42 households are working outside the village and sending back some wages or other forms of assistance. In Bukura 24 percent of the farms are managed by women and only 8 of the 263 family members live and work outside the village.

Summary Observations made by Rukandema at the end of his working paper are:

"1. The overall impression one gains is that the stock of resources both reflect and imply a severe degree of poverty in the sample areas. However, the two areas appear to be at slightly different levels of poverty mainly because of differences in land availability.

2. The effective farm labour available in the two areas is just not sufficient to produce adequate home supplies and a surplus for conversion into off-farm consumer and capital goods. There seem to be too few producers and too many consumers. Hence, a low level of consumption and

investment must necessarily result.

3. A very low level of technology characterises the sample farms. Within this technology, the tools used are both numerically inadequate and qualitatively poor. When this level of technology is superimposed on insufficient farm labour, the consequence can only be poverty.

4. It would appear that differences in farm sizes will have a significant influence on both the introduction and organization of the suggested intermediate technology."

Collection of data in the villages and preliminary analyses carried out in Kenya will be completed in December 1976. Mr. Rukandema will then return to Cornell to complete his doctoral dissertation. Dr. Robinson visited Mr. Rukandema in Kenya in June 1976, went to the survey sites in Kakamega District, and consulted with staff at the Institute of Development Studies. His visit to Kenya was primarily associated with a food and nutrition conference and program so there was no additional expense to US/AID funds for research supervision. Mr. Rukandema plans to work in East Africa when he completes his doctorate. As evidenced by the working paper already issued in the series of the Institute of Development Studies this research is an integral part of the work of an existing research institution in a developing country. This is the kind of research effort which should have substantial impact and usefulness in helping to understand problems and develop strategies to improve output and labor productivity using intermediate technology.

Upon completion of his doctoral studies Rukandema plans to return to work in East Africa. He is a displaced Ugandan citizen which makes his future status more difficult.

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

This study has examined the efficacy of different programs designed to reduce malnutrition in the Philippines through increasing the production of certain nutritious foods. In examining these programs, broader issues have been touched upon, including the role of nutrition in economic development and the ways in which nutritionists, plant breeders, and economists traditionally have viewed the interrelationships between agricultural production and the nutritional status of different groups in the population. An attempt was made to integrate the methods of analysis used by these three professions to evaluate the potential nutritional impact of different agricultural production programs designed to increase total nutrient availabilities; conclusions were drawn not only about the relative nutritional and economic impacts of these different programs, but also about the strengths and weaknesses of the methods of analysis used by these professions in examining the relationships between food production and food intake.

The six objectives of the study were:

- 1) To examine the current nutrition situation in the Philippines.
- 2) To develop a methodology which would enable evaluation of the impact of changes in agricultural production patterns on the nutritional status of low-income groups in the population. The relative effectiveness of six different agricultural-nutritional programs in raising the per capita availability of calories and protein to the Filipino poor were examined. In evaluating these six programs, several issues were dealt with: a) determining how the programs would be designed and administered,

b) estimating the potential costs of the programs, and c) identifying factors which could hinder implementation of the programs.

3) To determine how much these programs would increase per capita protein and calorie supplies among the low-income group, and which programs would be most effective in increasing nutrient supplies to the Filipino poor.

4) To compare the income and price changes which would result from these programs in terms of their relative effectiveness in increasing the poor's total consumption of calories and protein.

5) To contrast the nutritional effect that these programs would have on the poor with the impact that would result from the introduction of a high-protein rice in the country.

6) Make qualitative judgements regarding the regional and intra-family distribution of benefits from each of these programs, including the introduction of a high-protein rice.

Malnutrition is a serious problem in the Philippines, especially among the poorer classes and regions of the country. In order to deal with the problem of malnutrition, programs to increase agricultural production often have been advocated, in hopes that higher levels of food production would lead to lower food prices, which in turn would allow the poor to increase their levels of consumption. However, higher levels of food production generate several important effects in addition to their impact on prices. In order to fully evaluate the economic and nutritional impact of changes in agricultural production, these various effects have to be analyzed carefully.

An input-output model for the Philippines consisting of 63 sectors

was constructed from the original 194 sector model for 1965 developed by the National Economic Council. The sectors involving rice production were updated to reflect major changes in technology resulting from the introduction and use of the high yielding varieties. Final demand and imports were adjusted accordingly. The resulting coefficients and sector flows were used in evaluating different policy alternatives and their expected impact on the Philippine economy.

It was found that while most of the programs examined in this study would have a significant impact on raising per capita calorie and protein consumption levels of those members of the population who are in the lower four quartiles of the income distribution, all of these programs would be quite expensive to implement. But in contrast with the high support costs, the amount of extra production inputs needed to implement these programs would be moderate.

Of the particular programs investigated, pulse production programs would be most cost-effective in increasing protein consumption among the low-income group, not only being far more effective in this regard than increased fishpond production, but also comparing favorably to direct income transfers to the poor. Similarly, higher levels of rice production in most instances would appear to be more cost-effective in increasing calorie consumption among the poor than would increased rootcrop production, unless one assumes a somewhat higher price elasticity of demand for rootcrops at lower price levels.

The analysis indicates that the introduction of a high-protein rice into the country would increase protein availability to the low-income group by roughly the same amount as would the program designed to increase

pulse production, if one assumes that approximately 50 percent of the palay area in the country would be planted to the new variety. It is emphasized, however, that merely introducing such a variety into the country without taking any measures to increase the total volume of agricultural production probably would do very little to reduce protein deficiencies among the poor; the dietary and food availability surveys reviewed in the study indicate that a low caloric intake is one of the main causes of the low levels of protein intake found among low-income groups in the Philippines.

The effect on consumption of the increased income generated by the six agricultural production programs analyzed in this study would be substantial; these increased income levels, however, would be critically dependent on the maintenance of support prices at levels to encourage continuing production.

Staatz is currently working for the University of Michigan on a US/AID financed program and is located in the Ivory Coast. Staatz's thesis was one of three chosen by the American Agricultural Economics Associations as the most outstanding presented during 1975 from throughout the United States in all fields of agricultural economics.

9. 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 major 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 calorie 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 national planners. To achieve this, a price policy which enables the government to fix the farm and retail prices as well as to control all imports and exports is followed. The aim of this research is to study problems of Turkish Price Policy in detail and provide policy makers with more powerful decision tools in balancing demand and supply.

Unsal spent the period November 1974 through July 1975 in Turkey familiarizing himself with the government price policy, the characteristics and nature of the wheat production, assembly, and distribution system and collecting basic data for use in his analysis.

In the thesis he includes the history of public and private involvement in wheat over time as well as the spatial and seasonal nature of production distribution, consumption and prices. He has constructed a transportation cost matrix between the various assembly points and consuming points throughout Turkey. Cost estimates for storage and transfer from assembly points to market have been developed as well as costs of transportation from farms to local assembly points.

Through the use of a transportation model he has investigated the consequence of alternative price policies and the use of alternative transportation systems. By comparison of actual costs of transportation and storage he has estimated imputed costs of the government price intervention and distribution program and compared them with realized

costs. These implicit costs can provide an indication of the social cost of achieving the distribution goals of the price intervention scheme.

Analysis of basic data and the transportation models has been completed. The manuscript is about two thirds written. Unsal has returned to Turkey for a four-month tour of military duty; therefore, completion has been somewhat delayed. He expects to return to the manuscript before the end of 1976. The study should be completed within about five months of that date. Unsal expects to return to a position in government when he completes his doctoral program.

IV. 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 source of income. It has provided a measure of flexibility in using scarce resources. Most of our grant funds have been used to support graduate assistants, the costs of research on real problems at field locations in the less developed countries and for 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. While Dr. D. G. Sisler has been the key faculty member involved in much of the US/AID 211(d) grant, Drs. Robinson, Forker, Mount, Poleman, Conklin, Mellor and Blandford have all been involved in important aspects.

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 and cooperating economists at the Universities and Research Centers in LDC's. 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 Lele 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.

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 the resources of the College office 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 nation's 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.

V. Other Resources for Grant Related Activities

The 211(d) grant has been an important part of the Department's program of research and teaching at the graduate level in economic development and international agriculture. The total program is substantial with funding drawn from a number of sources.

The largest source of support is from the State of New York.

The Department of Agricultural Economics is located in the New York State College of Agriculture and Life Sciences, Cornell University. It is one of the contract colleges of the State located at Cornell. All salaries for faculty, secretarial, clerical and support staff and the maintenance of buildings, heat, light, and similar costs are provided by the State of New York. In the international area special funding for specific projects and graduate student support has been provided by the Rockefeller Foundation, the Ford Foundation, the International Rice Research Institute, CIMMYT, US/AID through its fellowship program, AFGRAD, the Agricultural Development Council, Foreign Area Fellowships and the Social Science Research Council. In a number of cases documented earlier (Accomplishments) a combination of sources of funding have been used to develop an overseas research program.

The 211(d) grant funds have been used primarily to provide assistant-

ships and thesis research support for graduate students in overseas locations. It has also been used to bring visiting professors to this campus for 6 months to teach at the graduate level and to assist in publishing results from research in the international area. No faculty salaries or permanent staff have been paid from grant funding.

During the period of the grant, Dr. J. W. Mellor from this Department has been the Director of a number of important contract research efforts supported by US/AID. These contracts have provided salary support for staff working on these projects and graduate student assistants. During the same time span there have been smaller research contracts in the international area supporting related faculty work from the United States Department of Agriculture, the Tariff Commission, and the Rockefeller Foundation.

VI. Utilization of Institutional Response Capability in Development Programs

A. Faculty Activities

It has not been Department or College policy to require the reporting of all requests for assistance which are made to individual faculty, or to various administrators during the course of a year. Insofar as resources allow we encourage faculty to share the results of their work with anyone who can make use of research when it is completed. We do encourage reporting of all trips outside the State of New York. The report form suggested for this section of the report does not seem appropriate given the nature of the use of the funds for the 211(d) grant program.

In many respects the most important product of the 211(d) grant program are the trained scientists who complete degrees and add to our research knowledge in specific LDC's. As the section on Accomplishments

indicates all of the students included in this report are or will be actively involved in development work.

The following listing provides an indication of agricultural economics faculty involvement in the utilization of the results of research and participation in current teaching and research programs of an international character.

CONKLIN, HOWARD E.

Venezuela, Merida. Fall 1975. Member of the Technical Advisory Groups for the Sierra Club - Bienestar Rural Study of Tropical Rain Forests.

FREEBAIRN, DONALD K.

Colloquium on Agricultural Price Policy, Cornell University, February 1976.

Comments to B. Stavits's paper, "The Rationale of Relative Agricultural Prices in the People's Republic of China."

MELLOR, JOHN W.

Italy, Bellagio. September 20-24, 1975. Participate in conference on

"Nutrition and Governmental Policy in Developing Nations," Rockefeller Foundation Study and Conference Center.

Japan, Tokyo. September 29-October 10, 1975. Attend the symposium on

Economics of Foodgrain Distribution sponsored by the Asian Productivity Organization and present paper entitled, "Performance of Private Trade and Cooperatives."

Japan, Tokyo. October 8, 1975. "Food Population and Economic Development

An American Perspective," Lecture sponsored by the U. S. Information Agency Tokyo American Center.

Japan, Tokyo. October 6, 1975. Seminar entitled, "Alternative Strategies

to Economic Growth," presented at the Institute of Developing Economies.

MELLOR, JOHN W. (continued)

- Philippines, Los Banos. November 29-December 13, 1975. Serve on the
Quinquennial Review for the International Rice Research Institute.
- India, Madras. January 13-18, 1976. Attended the Pugwash Conference on
Science and World Affairs and give paper entitled, "Foreign Economic
Assistance and the Choice of Development Strategy."
- Lecture entitled, "The Role of Agriculture in the Development Process,"
and "The Importance of and Means for Obtaining Employment Oriented
Development," Foreign Service Institute, Department of State, Washington,
D. C., June 16-17, 1975.
- Lecture on "Agro-Industrial Development and Growth Linkages," U. S.
Department of Agriculture Graduate School, Washington, D. C., June
23-25, 1975.
- Lecturer in the Summer Institute Program on Policies for Science and
Technology in Developing Nations, Cornell University, June 15, 23,
August 5 and 7, 1975.
- Diet for a Small Planet, Summer Session, Cornell University, Lecture
entitled, "Food and Development of Low Income Countries."
- Evening lecture, Cornell University entitled, "Foreign Economic Assistance
and the Choice of Development Strategy," September 2, 1975.
- 1975 Agricultural Policy Seminar, U. S. Department of Agriculture,
Washington, D. C., lecture entitled, "Income Distribution and
Employment Issues," September 17, 1975.
- Lecture entitled, "The Role of Agriculture in a Rural Development Strategy,"
Manpower Development Division, Agency for International Development,
Washington, D. C., October 17, 1975.

MELLOR, JOHN W. (continued)

- Cornell Faculty Seminar on the World Food Situation, Joint lecture with Norman Uphoff on "Production Strategies and Income," October 20, 1975.
- Keynote speaker, "Food, Population and the Pattern of Development in Asia," Ninth Annual Asian Seminar, State University of New York, Albany, October 22, 1975.
- Talk to graduate research group on "Nutrition Planning and Public Policy in India, Massachusetts Institute of Technology, Boston, Mass., October 24, 1975.
- Lecture on "Growth Linkages," Graduate School, U. S. Department of Agriculture, Washington, D. C., October 29-30, 1975.
- Lecture, "The Role of Agriculture in Participatory Development Strategies," National Economic Management Course, International Bank for Reconstruction and Development, Washington, D. C., October 31, 1975.
- Lecture, "Economic Incentives and Institutional Development," National Economic Management Course, International Bank for Reconstruction and Development, Washington, D. C., November 3, 1975.
- Lecture as part of course, "America and World Community," on "Interdependencies of Global Population, Food, Economic Growth and Man's Control of the Environment," Cornell University, November 4 and 6, 1975.
- Seminar for course entitled: "Technology Transfer and Adaptation: A Seminar in Policy Planning in Developing Nations," Uris Hall, Cornell University, November 5, 1975.
- Lecture entitled, "U. S. Exports and the Developing World: How do our Exports Relate to their Development and to our Markets" given at the Working Conference on the Export Aspects of Food Policy, The Academy for Contemporary Problems, Columbus, Ohio, December 15, 1975.

MELLOR, JOHN W. (continued)

Lectures entitled, "The Role of Agriculture in the Development Process," and the "Importance of and Means for Obtaining Employment Oriented Development," Foreign Service Institute, Department of State, Washington, D. C., December 24, 1975.

Organized and conducted Colloquium on Agricultural Price Policy and present paper entitled, "Agricultural Price Policy and Income Distribution in Low Income Nations," Cornell University, February 25-27, 1976.

POLEMAN, THOMAS T.

Professor Poleman accompanied William Gasser of the U. S. Department of Agriculture on a State Department sponsored lecture tour of Asian cities in January and February 1976 to discuss the world food situation with educators and government officials. A list of places and topics for public lectures follows:

Manila, Philippines. January 14, 1976. Bureau of Agricultural Economics,
"Recent Changes in the World Food Situation."

Manila, Philippines. January 15, 1976. Thomas Jefferson Cultural Center,
"The World Food Supply."

Jakarta, Indonesia. January 19, 1976. Indonesian Institute of Sciences
"World Food Problems and Their Global Implications."

Medan, Indonesia. January 22, 1976. University of Northern Sumatra,
"The World Food Situation."

Medan, Indonesia. January 22, 1976. Tropical Crops Research Institute,
"The World Food Situation."

Kuala Lumpur, Malaysia. January 27, 1976. Agricultural Institute of
of Malaysia, "World Food Supply."

POLEMAN, THOMAS T. (continued)

Rangoon, Burma. January 29, 1976. U. S. Information Center, "The Present World Food Situation and Outlook."

Rangoon, Burma. January 30, 1976. U. S. Information Center, "Problems of Agricultural Expansion in Developing Countries."

Rangoon, Burma. January 31, 1976. Medical Research Department, "National Food Accounting."

Chiang Mai, Thailand. February 3, 1976. Chiang Mai University, "The World Food Situation: Its Implications for Thailand Agricultural Development."

Bangkok, Thailand. February 6, 1976. Ministry of Agriculture, "National Food Accounting."

Rose Garden, Thailand. February 7, 1976. Rose Garden Seminar on the World Food Market, "Analyzing the World Food Market."

Rose Garden, Thailand. February 7, 1976. Rose Garden Seminar on the World Food Market, "Problems of World Trade in Agricultural Commodities."

Participated in Symposium on Farming and Food Production in African Economies, University of Illinois, 7-8 May 1976.

Professor Poleman also visited Sri Lanka in February and Mexico in March and April in connection with student research.

ROBINSON, KENNETH L.

Kenya, Nairobi. June 2-19, 1976. Participated in a Workshop on nutrition planning and food policy at the University of Nairobi.

Spoke on the world food situation and U. S. Food aid policies at a meeting of the National Council of Jewish Women in Rochester, New York, November 5, 1975.

Participated in a workshop on World Hunger sponsored by the National Council of Jewish Women in Binghamton, New York, January 31, 1976.

ROBINSON, KENNETH L. (continued)

Participated in the Conference on New Developments in Agricultural Stabilization sponsored by the Canadian Agricultural Economics Society, Quebec City, March 17, 1976. The paper presented there is now a Cornell Agricultural Economics Staff Paper no. 76-19 entitled "Price Stabilization Policies for the United States," April 1976.

SISLER, DANIEL G.

Mexico, CIMMYT Vera Cruz. January 1976. Participated in Teaching Graduate Course sponsored by International Agricultural Development Office - IAD 602.

STANTON, B. F.

Mexico, CIMMYT. March 1976. To work with research team of faculty and students on corn breeding programs for insect and disease resistance. Philippines, IRRI. April 1976. To participate in IRRI Rice Conference and meet with Economics Department Staff.

Australia, Canberra. April-August 1976. To teach in graduate program at Australian National University in Colombo Plan sponsored Masters Degree in Agricultural Development Economics.

India, Tamil Nadu. August-November 1976. To teach in graduate program at the Tamil Nadu Agricultural University, Department of Agricultural Economics sponsored by the Institute of International Education.

B. Graduate Students with International or Development Interests

Graduate students enrolled with majors in agricultural economics at Cornell University usually number between 85-95 annually. A substantial proportion of these students either come from a developing country or have a minor with one of the faculty concerned with development issues. The following listing prepared for our College Office of International

Agricultural Development indicates student interest for the academic year 1975-76:

U. S. Students

<u>Name</u>	<u>Degree Sought</u>	<u>Name</u>	<u>Degree Sought</u>
Belt, J.	Ph.D.	Hornig, E. D.	M.S./Ph.D.
Calkins, P. H.	Ph.D.	Lassiter, G. C.	Ph.D.
Crawford, E.	Ph.D.	Levine, M. B.*	Ph.D.
Eddy, E. D.	M.S.	Matlon, P.	Ph.D.
Ender, G. P.	Ph.D.	Pachico, D.	Ph.D.
Eriksen, J. H.	Ph.D.	Sander, W. H., III*	Ph.D.
Galt, D. L.	Ph.D.	Scherr, S. J.	M.S./Ph.D.
Goldman, R.	M.S.	Schultheis, M.	Ph.D.
Harbert, L.	M.S.	Wiggins, R.	M.S.

*Student with minor in International Agriculture; all others major in International Agriculture.

Foreign Students

<u>Name</u>	<u>Degree Sought</u>	<u>Country</u>
Akenda-Ondoga, V.*	Ph.D.	Uganda
Bastos, E. G.*	Ph.D.	Brazil
Borgoltz, P.	Ph.D.	France
Burger, V.	Ph.D.	Austria
Chanthrasothy, S.	M.S.	Malaysia
Cifuentes, E.*	Ph.D.	Chile
Desai, S. S.*	M.S.	India
Doraswamy, G.	Ph.D.	India
Dosayla, E. D.*	M.S.	Philippines
Edirisinghe, N.	M.S.	Sri Lanka
Escobar, G.	M.S.	Colombia
Fernandez, J.	Ph.D.	Nicaragua
Ferroni, M. A.	Ph.D.	Switzerland
Hart, G.	Ph.D.	S. Africa
Irvine, R. D.*	M.S.	Canada
Karunasekera, M.	Ph.D.	Sri Lanka
Lee, Seon	Ph.D.	Korea
Madjd, M. G.	Ph.D.	Iran
Matthews, A.*	M.S.	Ireland
Md: Isa, A. H.*	M.S.	Malaysia
Mensah, P.*	M.S.	Ghana
Monares, A.	Ph.D.	Chile
Nevala, M.*	Ph.D.	Finland
Noori-Naini, M. S.	Ph.D.	Iran
Ranade, C. G.	Ph.D.	India
Rukandema, F. M.	Ph.D.	Uganda
Sepulveda, S.	Ph.D.	Chile

Foreign Students (continued)

<u>Name</u>	<u>Degree Sought</u>	<u>Country</u>
Scholvinck, J.	Ph.D.	Netherlands
Shaw, R.*	Ph.D.	Australia
Smith, W. W.*	M.S./Ph.D.	Jamaica
Sobrinho, A.*	Ph.D.	Brazil
Talvera-Diaz, L.	Ph.D.	Puerto Rico
Unsal, F.	Ph.D.	Turkey
Worachai, L.*	M.S.	Thailand
Zeaudeen, P.	Non	India

*Students with minor in International Agriculture; all others major in International Agriculture.

C. Graduate Students Currently Conducting Research Overseas

During the academic year 1975-76 the following students left the University for an overseas location to work on thesis research.

<u>Name</u>	<u>Date left U.S.</u>	<u>Country</u>	<u>Source of Field Support</u>
Doraswamy, G.	January 1976	India	US/AID, ta-C 1327
Galt, D. L.	June 1975	Mexico	Rockefeller Found.
Garcia, P.	January 1976	Mexico	Intl. Ag. Dev.
Hart, G.	March 1975	Indonesia	Foreign Areas Fellow.
Rukandema, F. M.	May 1975	Kenya	US/AID, 211(d)
Scherr, S. J.	January 1976	Mexico	US/AID, 211(d) Fulbright-Hayes Scholarship
Sepulveda, S.	October 1975	Colombia	Intl. Ag. Dev.

The following students returned from research overseas and are working on or completed their dissertations and research papers (1975-76):

<u>Name</u>	<u>Dates Overseas</u>	<u>Country</u>	<u>Source of Field Support</u>
Burger, V.	January 1974 - October 1975	Nepal	US/AID, 211(d)
Calkins, P.	August 1973 - February 1975	Nepal	Foreign Area Fellow. US/AID, 211(d)
Matlon, P.	September 1973 - September 1975	Nigeria	US/AID, 211(d)
Ranade, C.	February 1975 - September 1975	Philippines	US/AID, ta-C 1131 IRRI
Unsal, F.	September 1974 - August 1975	Turkey	US/AID, 211(d)

C. Linkages and Continuing Research Relationships

This Department, the College of Agriculture and the University have both an historic and continuing commitment to research and scholarship in the processes of agricultural development. The leadership of the College continues in its commitment to international work. There is an excellent atmosphere for graduate study and teaching because a series of agricultural disciplines have active faculty-student programs in related areas. Financial support for these programs is complex and often difficult to maintain on a continuing basis. But efforts in any individual discipline or specific project area will have the substantial benefit of institutional interest and critical knowledge and experience from some other faculty.

There is a strong desire on the part of individual departments and faculty to maintain the tradition of freedom and responsibility at Cornell and yet have concentrations of interest and knowledge which lead to programs of strength and excellence. One means is to develop strong working relationships with a few centers of excellence in international agriculture. The College office of international agricultural development is supportive of all such initiatives. Currently important programs have been developed with IRRI, CIMMYT, CIAT and the Center for Potato Improvement. Agricultural economics is actively involved in two of these efforts.

The 211(d) grant has strongly encouraged developing working relationships with other universities both within the United States and overseas. The meetings of faculty from the six universities with 211(d) grants during the last three years of the program increased understanding and cooperation

on related research programs. These informal relationships should continue even though the grant program has been terminated.

One of the lasting benefits both to our faculty and to the development process in specific countries is the cumulative effect of a series of students working on related projects in one location. The 211(d) grant has helped to maintain the good working relationship between our faculty and staff at IRRI and the University of the Philippines, Los Banos. The working relationships with economists in the central government and with agricultural economists at the university in Nepal have been established and developed. Old university ties in Indonesia and India have been renewed by projects supported with 211(d) funds. Initial contacts and research associations have been made in Nigeria with IITA and three university programs. These will allow further work and thesis projects to proceed more smoothly and effectively.

VII. Next Year's Plan of Work and Other

This is the final report for the 211(d) program in agricultural economics at Cornell University. This grant has made important contributions to graduate teaching and research programs at this university. We believe these funds have been used carefully and wisely. They have expanded the graduate program and enriched the teaching program. Grant funds have assisted a number of students with overseas research. These students are an important component of the development process today in important roles in developing economies. It is with substantial regret that we observe the closing of this 211(d) grant program which has been mutually beneficial to this university and development programs in a number of developing countries.

Table I

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

Review Period
July 1, 1975 to September 30, 1976

Grant Related Activities	EXPENDITURES		1975-76 Non 211(d) Funding*
	Period Under Review	To End of Project	
Research	49,227	247,607	300,000
Teaching	7,084	36,077	150,000
Libraries	--	--	30,000
Mission Payments (Research)	298 (net)	3,170	--
Consultation	--	1,632	--
Other	<u>739</u>	<u>1,514</u>	<u>20,000</u>
Total	57,348	290,000	500,000

* These figures are best estimates

Table II-A
211(d) Expenditure Report

Actual Summary

Under Institutional Grant AID/csd-2823

Review Period 7/1/75 to 9/30/76

<u>Line Items</u> <u>(To conform to budget</u> <u>in Grant document)</u>	<u>Expenditures to Date</u> <u>Period Under Review</u>	<u>Cumulative Total</u>
Salaries	35,203.66	169,262.98
Travel	1,159.96	18,754.05
Equipment (leases & rentals)	-----	1,079.94
Other	2,850	12,109.41
Overseas Research Expenses	9,861.55	51,880.60
Mission Payments	3,080.71	5,952.94
Computers	2,796.12	8,328.54
Printing	196.20	7,527.58
Tuition & Fees	<u>4,964.60</u>	<u>17,887.77</u>
Total	60,131.68	292,783.81
Credit Reversal to Cover Overdraft	<u>-2,783.81</u>	<u>-2,783.81</u>
Total Contract Expenditures	57,347.87	290,000.00

Table II-B

211(d) Expenditure Report

Reporting Year Detail

Under Institutional Grant AID/csd-2823

Reporting Period July 1, 1975 - September 30, 1975

I. Salaries:

<u>Other Professional</u>	<u>Time (months)</u>	<u>Dollars</u>	
Kramer, J.		<u>14,122.42</u>	14,122.42
<u>Graduate Assistants</u>			
Burger, V.	11.6	3,901.10	
Calkins, P.	7.2	2,403.00	
Karunasekera, M.	6.7	2,157.80	
Matlon, P.	12.7	4,018.95	
Rukandema, F.	13.2	4,230.39	
Unsal, F.	11.3	<u>3,746.00</u>	20,457.24
<u>Clerical</u>			
Berzak, M. L.	1.3	<u>624.00</u>	624.00
<u>Other</u>			
Fees and Tuition		<u>4,964.60</u>	<u>4,964.60</u>
Total Salary Expense			40,168.26

Table II-B (cont.)

II. <u>Student Research Support:</u>			
	<u>Name</u>	<u>Location of Study</u>	<u>Dollars</u>
	Burger, V.	Nepal	807.93
	Calkins, P.	Nepal	95.46
	Hart, G.	Indonesia	1,964.73
	Matlon, P.	Nigeria	4,126.43
	Rukandema, F.	Kenya	<u>2,867.00</u>
			9,861.55
III. A. Consultants - none			
B. Guest Lecturers, Visitors, etc. - none			
C. Conference Expenses			
			<u>2,119.60</u>
			2,119.60
IV. <u>Travel:</u>			
	<u>Individual Faculty</u>	<u>No. of Trips</u>	
	Robinson, K.	1	35.50
	Sisler, D.	2*	688.28
	Stanton, B.	3	<u>446.18</u>
			1,169.96
	*Foreign Travel = \$592.67		
V. <u>Equipment</u> - none			
VI. <u>Library Acquisitions:</u>			
			<u>41.81</u>
			41.81
VII. <u>Printing Charges:</u>			
			<u>196.20</u>
			196.20
VIII. <u>Miscellaneous:</u>			
	Communications and Supplies		697.47
	Computers		2,796.12
	Mission Payments		<u>3,080.71</u>
			6,574.30
IX. <u>Credit Reversal for Overdraft:</u>			
			<u>-2,783.81</u>
			<u>-2,783.81</u>
	Total Expenses (July 1975 - Sept. 1976)		57,347.87

Publications

Department of Agricultural Economics Staff Paper Series

- Eddy, E. D., "Development of the Livestock Sector in West Africa," A. E. Staff Paper No. 75-17, Sept. 1975.
- Scherr, S. J., "The Mexican Development Strategy: Retrospect and Prospect," A. E. Staff Paper No. 75-28, Dec. 1975.
- Roche, F. C., "The Demographic Transition in Sri Lanka: Is Development Really a Prerequisite?," A. E. Staff Paper No. 76-5, Jan. 1976.
- Wolgemuth, J., "An Economic Analysis of a Food Supplement for Manila School Children," A. E. Staff Paper No. 76-10, Feb. 1976.
- Hoopes, R. W., "Cassava as a Food Resource in Brazil," A. E. Staff Paper No. 76-18, Apr. 1976.
- Poleman, T. T., "National Food Accounting and Estimating Demand for Food in Tropical Africa--Tables and Charts," A. E. Staff Paper No. 76-20, May 1976.
- Gerling, M., "The Relevance of the OPEC Experience to Manipulation of Other Primary Commodity Prices," A. E. Staff Paper No. 76-22, May 1976.
- Picciano, L., "The Sweet-Toothed Carnivore: Foraging in an Affluent Society," A. E. Staff Paper No. 76-23, May 1976.
- Neff, J., "Agrarian Reform in Nutrition in Peru: Assessment of the Cornell Peru Project at Vicos," A. E. Staff Paper No. 76-23, May 1976.
- Smith, M. A., "The Stagnation of Chilean Agriculture: History and Outlook," A. E. Staff Paper No. 76-25, June 1976.
- Brunk, M. E., "World Food Prices and Politics," A. E. Staff Paper No. 75-26, December 1975.

Occasional Paper Series, Department of Agricultural Economics, Cornell University-USAID Technological Change in Agriculture Project

- Mellor, J. W., (with Uma Lele), "The Interaction of Growth Strategy, Agriculture, and Foreign Trade: The Case of India," Chapter 4 in George S. Tolley and Peter A. Zadrozny (Eds.), Trade, Agriculture and Development. Cambridge, Mass.: Ballinger Publishing Company, 1975. Pp. 93-113. Occasional Paper No. 74, reprint.
- Desai, B. M., "Relationship of Consumption and Production in Changing Agriculture - A Study in Surat District, India," Occasional Paper No. 80, February 1975.

Mellor, J. W., "Performance of Private Trade and Cooperatives," Occasional Paper No. 87, Dec. 1975.

_____, "The Impact of New Agricultural Technology on Employment and Income Distribution - Concepts and Policy," Occasional Paper No. 81, May 1975.

_____, "Recent Testimony to Congressional Committees on World Food Problems and Food Aid," Occasional Paper No. 82, July 1975.

_____, (with Uma Lele, D. Biamonte and A. Goldsmith), "Estimates of Foodgrain Production and Marketings from Input Estimates, India, 1949/50 to 1973/74 and Projections to 1983/84," Occasional Paper No. 83, September 1975.

Dabholkar, U. and A. Goldsmith, "Changes in the Composition of Capital, Employment, Value Added and Production in Various Industry Groups, India, 1951-65," Occasional Paper No. 84, October 1975.

Shortlidge, R. L., Jr., "Is Human Capital an Important Determinant of Earnings in Small Manufacturing and Retail Firms in India," Occasional Paper No. 85, March 1976.

Other

Blandford, D., "Export Monopoly Marketing Boards in West Africa," in Agricultural Marketing Boards - An International Perspective, ed. Hoos, S., University of California Press (forthcoming).

Mellor, J. W., The New Economics of Growth - A Strategy for India and the Developing World, A Twentieth Century Fund Study. Ithaca: Cornell University Press, 1976.

_____, "An Employment Oriented Strategy of Development," in Raymond E. Dumett and Lawrence J. Brainard (Eds.) Problems of Rural Development: Case Studies and Multi-Disciplinary Perspectives. Leiden, Holland: E. J. Brill Press, 1975. Pp. 131-139.

_____, "Food Aid and Long-Run World Food Population Balances," The Columbia Journal of World Business, Vol. X, No. 3, Fall 1975. Pp. 29-35.

Foleman, T. T., "Problems of World Trade in Agricultural Commodities," (Rose Garden Seminar on the World Food Market, Bangkok, Thailand, 7 Feb. 1976).

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Freebairn, Donald K., "El Ejido en la Agricultura Moderna," in Ramon Fernandez y Fernandez, Temas Agrarios, Fondo de Cultura Economica, Mexico, pp. 160-197.

Saleh, Hormoz and Sisler, Daniel, "An Econometric Analysis of the Demand for Mutton and Poultry in Iran," A. E. Res. 75-9, Cornell University, December 1975, pp. 42.

Montgomery, R. D. and Sisler, D. G., "Labor Absorption in Jogjakarta, Indonesia: An Input-Output Study, A. E. Res. 75-10, Cornell University, March 1976, pp. 85.

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