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211(d) Annual Report: 1975
Date: August 8, 1975

Title: To Strengthen and Expand within the University of Minnesota Research and Training Competence in Policy Problems of Agricultural Development

Grantee: University of Minnesota

Program I - Agricultural Economics Research and Training
Program - Department of Agricultural and Applied Economics

Program II - Development Policy Program - University of Minnesota Economic Development Center

Director: Martin E. Abel

STATISTICAL SUMMARY

Period of Grant: July 1, 1970 to September 30, 1976 (as extended)

Amount of Grant: July 1, 1970 to September 30, 1976

Program I -	{ original \$230,000	
	{ extension 59,767	\$289,767
Program II -	{ original 570,000	
	{ extension 75,202	<u>645,202</u>
Total -		\$934,969

Expenditures for Report Year: July 1, 1974 to June 30, 1975

Program I -	56,205
Program II -	<u>133,655</u>
Total -	\$189,860

Accumulated Expenditures: July 1, 1970 to June 30, 1975

Program I -	227,853
Program II -	<u>541,224</u>
Total -	\$769,077

Committed Expenditures: July 1, 1975 to Sept. 30, 1976

Program I -	60,207
Program II -	<u>100,836</u>
Total -	\$161,043

NARRATIVE SUMMARY

The grant was made to "Strengthen and Expand Within the University of Minnesota Research and Training Competence in Policy Problems of Agricultural Development."

The research effort has been focused in four major areas: (1) population and labor markets in development; (2) trade and development: inter-regional and international; (3) commodity and factor markets in developing countries; and (4) technical change and resource use. In addition to the training opportunities associated with the research program itself the Center has facilitated the development of workshops for graduate students and staff in the areas of (a) Agricultural Trade and Development, (b) Human Capital, (c) Trade and Development, and (d) Resource and Regional Economics. A detailed report of the research and training activities of the University of Minnesota Economic Development Center is contained in the Annual Report: 1975.

On June 30, 1975, the Center completed its fifth year of funding under the AID 211(d) Grant. Several projects initiated during earlier years of the Grant were completed and the results made available in the form of theses, staff papers, and journal reprints. The completed studies are listed below:

Trade and Development: Interregional and International

Martin E. Abel and K. William Easter, Regional Agricultural Development Planning in India

Chong Nam, Economies of Scale and Production Functions in South Korea's Manufacturing Sector

Malcolm J. Purvis and Richard M. Fraenkel, The Agricultural Policy Process in Tunisia

Jorge Marquez-Ruarte, The Effect of Nonagricultural Policies on Argentine Agriculture

Commodity and Factor Markets in Developing Countries

Dale C. Dahl, Young Kun Shim, Bai Yung Sung, and Sang-Woo Park, Fertilizer Production, Consumption and Distribution in Korea: An Economic Analysis

Jerome W. Hammond and Dale L. Good, The Price and Distribution System for Fertilizers in Tunisia

Technical Change and Resource Use

Willard W. Cochrane and Salem Gafsi, Green Revolution: The Tunisian Experience

These completed studies are summarized in the printed Annual Report: 1975. The results of a number of these studies have direct and significant implications for agricultural development policies.

The AID 211(d) Grant has been extended to September 30, 1976.

This extension will facilitate a closer alignment of the efforts at the University of Minnesota under the 211(d) Grant with the current and prospective priority interests of AID. The AID review and evaluation of 211(d) Grants conducted during 1974/75 provides useful guidelines for more directly relating the 211(d) Grant and other mechanisms to AID policy and program objectives.

DETAILED REPORT: 1974/75

Background and Objectives

The general objective of the AID 211(d) Grant was to strengthen and expand within the University of Minnesota research, training, and service capacity in policy problems of agricultural development. This was to be accomplished through two complementary programs: (a) an Agricultural Economics Research and Training Program (Program I) and (b) a Development Policy Program (Program II).

It was anticipated that the two programs would contribute to the supply of economists with analytical skills and operational experience in the policy problems of agricultural and economic development; expand the research and operational involvement of new and existing faculty on problems of agricultural and economic development policy; and enlarge the research opportunities of graduate students interested in economic development. These objectives have been achieved in a significant way.

It was also anticipated that the program to be developed at the University of Minnesota would give particular emphasis to intersector economic relationships--through the intersector labor and product markets and through the public institutions which link the agricultural and non-agricultural sectors of the developing economies. This objective has also been realized.

Expenditures by program area during 1974/75 are shown in the table, "Program Expenditures by Program Areas, 1974/75." The activities within each program area are described more fully in Annual Report: 1975.

Program Expenditures by Program Areas, 1974/75

	Program I		Program II	
	Amount	%	Amount	%
Population and Labor Markets in Developing Countries	--	0	\$ 23,713.43	18
Trade and Development: Inter- regional and International	\$ 4,008.47	7	55,165.04	41
Commodity and Factor Markets in Developing Countries	6,118.41	11	--	0
Technical Change and Resource Use	12,745.12	23	6,461.82	5
Public Enterprises and Development	--	0	--	0
Graduate Training	15,101.46	27	2,511.87	2
Program Support and Adminis- tration	<u>18,232.30</u>	<u>32</u>	<u>45,802.95</u>	<u>34</u>
Total	\$56,205.76	100%	\$133,655.11	100%

Accomplishments, 1974/75

The accomplishments under the AID 211(d) Grant to the University of Minnesota during 1974/75 are reported in the UM Economic Development Center Annual Report: 1975 (enclosed).

The initial section of the Annual Report: 1975 contains short summaries of research recently completed or currently under way, including Ph.D. theses.

The second section of the Annual Report: 1975 describes related projects, programs, and activities in which members of the Departments of Economics and Agricultural and Applied Economics are involved. This section of the report describes (a) research activities which are complementary to those financed from 211(d) funds and (b) involvements of staff in developmental activities in developing countries.

The final sections of the Annual Report: 1975 deal with (a) the Graduate Program in Economic Development at the University of Minnesota, including graduate course offerings, staff, and staff developments; (b) Center publications; and (c) workshops and seminars.

Utilization of Institutional Resources in Development

In addition to the activities supported directly by the AID 211(d) Grant, the Department of Agricultural and Applied Economics and the Department of Economics are engaged in a wide spectrum of development programs and activities in developing countries. These activities are discussed on pp. 37-41 of the Annual Report: 1975.

Impact of Grant-Supported Activities on Developing Institutional Capabilities

The 211(d) Grant to the University of Minnesota has clearly resulted

in expanded capacity for graduate training in policy problems of agricultural development. As a result of the Grant, the Departments of Economics and Agricultural and Applied Economics were able to offer expanded programs of research workshops and seminars to graduate students supported by 211(d) funds as well as to students receiving support from other sources. This capacity has been augmented by the addition of two new permanent staff members, visiting staff, and increased participation of existing staff in the field of development in each department (see Annual Reports: 1972, 1973, 1974, and 1975).

The graduate training function is an integral part of the UM Economic Development Center Research Program. During 1974/75 continued progress was made in giving the research program a clearer focus around the four areas of (1) population and labor markets in development, (2) trade and development, (3) commodity and factor markets, and (4) technical change and resource use. Each of these areas represents critical problems in the developing countries.

The focus of the performance of population and intersector labor markets is directed to the problems of population growth, labor force absorption, and income distribution. The problem of rationalizing trade relations among countries and the performance of domestic factor and product markets in the face of strong protectionistic policies in both developing and developed countries is critical to the sustained growth of output and productivity in both the agricultural and nonagricultural sectors. The management of science and technology, including agricultural science and technology, to achieve both growth and equity among sectors, regions, communities, and individuals is one of the most serious problems facing policymakers in developing countries.

Efforts are under way to relate the four areas of concentration listed above more directly to agricultural development planning and agricultural sector analysis needs in developing countries.

To date the 211(d) Grant has provided support to 19 students who have completed Ph.D. degrees and to 16 other students, many of whom are in the process of completing degrees. The names of the students, their native countries, status of work, and project assignments are presented in table 1 and table 2. As can be seen from the data presented, strong emphasis has been given to training of foreign students and to directly involving students, both foreign and domestic, in some work in the developing countries. In addition, the 211(d) Grant has contributed and is contributing importantly to the training of a large number of graduate students in development whose research was not or is not supported from 211(d) funds. These students have benefited or are benefiting greatly from the various workshops and seminars and from the expanded staff involvement in economic development made possible by the 211(d) Grant.

The 211(d) Grant has also made possible the expansion of permanent staff, the use of existing staff, and the use of visiting staff members in problems of economic development. Table 3 provides a list of faculty in the Departments of Agricultural and Applied Economics, Economics, and Geography and in the Center for Comparative Studies who have received project support from the 211(d) Grant. This involvement and research output is substantial, by almost any measure. In addition, numerous staff members have worked with development agencies and governments of developing countries on problems of agricultural development. These activities are detailed in the sections of Annual Reports: 1972, 1973, 1974, and 1975 dealing with "Related Projects, Programs, and Activities."

Table 1. Students who received AID 211(d) support for completed Ph.D. dissertations

Name	Citizenship	Origin of data	Dissertation title
1. Edgardo E. Barandiaran	Argentina	Field work in Argentina	The Control of Money and Bank Credit in Argentina, 1972
2. Enrique O. Scala	Argentina	Field work in Argentina	The Efficiency of Import Substitution in the Argentine Automotive Industry, 1974
3. Peter K. Pollak	Austria	Field work in Thailand	Economic Analysis of Oilseed Markets in Thailand
4. Sudhin K. Mukhopadhyay	India	Available India data	Sources of Variation in Agricultural Productivity: A Cross-Section-Time-Series Study of India, 1974
5. Surjit S. Sidhu	India	Field work in India	Economics of Technical Change in Wheat Production in Punjab (India), 1972
6. Mitoshi Yamaguchi	Japan	Published time-series data	Technical Change and Population Growth in the Economic Development of Japan, 1973
7. Sachiko Yamashita	Japan	Published international data	An Exploration of the Economics of Taste and Demand for Food, 1973
8. Chong Nam	Korea	Published data	Economies of Scale and Production Functions in South Korea's Manufacturing Sector, 1975
9. Sang-Woo Park	Korea	Project supplied survey data	Fertilizer Distribution in Korea, 1975
10. Bai Yung Sung	Korea	Field work in Korea and project provided survey data	The Demand for Fertilizer in Korea, 1974
11. Salem Gafsi	Tunisia	Field work in Tunisia	Green Revolution: The Tunisian Experience, 1975
12. Tercan Baysan	Turkey	Published data	Economic Implications of Turkey's Entry into the Common Market, 1974

Table 1.—Continued

Name	Citizenship	Origin of data	Dissertation title
13. A. John DeBoer	U.S.	Field work in Thailand	Technical and Economic Constraints on Bovine Production in Three Villages in Thailand, 1972
14. Michael J. Hay	U.S.	Field work in Tunisia	An Economic Analysis of Rural-Urban Migration in Tunisia, 1974
15. Terry Monson	U.S.	Field work in Turkey and Germany	Migration, Experience-generated Learning and Infant Industries: A Case Study of Turkey, 1972
16. Clayton W. Ogg	U.S.	Published U.S., Canada, and Mexico data	Sources of Productivity Differences in North America, 1974
17. John H. Sanders	U.S.	Field work in Brazil	Mechanization and Employment in Brazilian Agriculture, 1950-1971, 1973
18. John E. Scarbrough	U.S.	Published data	Some Economic Effects of Customs Unions in South America, 1974
19. William W. Wade	U.S.	Published time-series data	Institutional Determinants of Technical Change and Agricultural Productivity Growth: Denmark, France, and Great Britain, 1973

Table 2. AID 211(d) supported students with dissertations in progress and students terminated without degrees

Name	Citizenship	Present status	Data source	Project assignment
1. Jose A. Cerro	Argentina	Terminated	Field work in Argentina	Regional Development in Argentina (thesis not yet filed)
2. Cristian Zegers	Chile	In progress	Field data from Chile	An Economic Analysis of Milk Production in Southern Chile
3. Armeane Choksi	India	--	--	Trade and Development Workshop
4. Gershom Rudish	Israel	In progress	Published data	Balance of Payment Policy
5. Donato Antiporta	Philippines	In progress	Field work in Philippines	Analysis of Constraints to Increasing Productivity in Philippine Agriculture
6. Norman Fox	U.S.	Project terminated	--	Regional Development in India
7. Donald Genadek	U.S.	Temporary-completed	--	Regional Agricultural Development Planning in LDC's
8. Karen Gulliver	U.S.	In progress	Published and unpublished data	Regional Agricultural Development in India: A Comparative Study
9. Robert Latham	U.S.	In progress	Field work in Central America	Economics of Forestry Information: Case Studies in Central America
10. William Meyers	U.S.	Temporary-completed	Published data	Induced Innovation in Agricultural Development
11. George Norton	U.S.	In progress	Field work in India and published data	Regional Agricultural Development in India: A Comparative Study
12. David Nygaard	U.S.	In progress		Agricultural Sector Analysis
13. Gary Skoog	U.S.	In progress	Published data	Equilibrium Model of International Production and Trade

Table 2.—Continued

Name	Citizenship	Present status	Data source	Project assignment
14. Frederick Thomas	U.S.	In progress		Resource Use
15. Richard Todd	U.S.	In progress		Agricultural Sector Analysis
16. John Underwood	U.S.	In progress	Published data	International Commodity Agreements

Table 3. Faculty in Departments of Agricultural and Applied Economics, Center for Comparative Studies, Economics, and Geography receiving or who have received project support from AID 211(d) grant

Name	Department	Project title	Publications
1. Martin E. Abel	Ag. and Appl. Economics	Regional Agricultural Planning in India	with K. William Easter, <u>Cropping Regions in India</u> , Econ. Dev. Center Bull. 73-1, June 1973
			with Delane E. Welsch and Robert W. Jolly, "Technology and Agricultural Diversification," Staff Paper 73-10, Jan. 1973
			with Delane E. Welsch, "Technology and the Agricultural Output Mix," Staff Paper 73-26, Oct. 1973
			with Delane E. Welsch, "Microeconomics of Technology and the Agricultural Output Mix," Staff Paper 74-16, Aug. 1974
			with Delane E. Welsch, "Environmental Constraints, Commodity Mix, and Research Resource Allocation," Staff Paper 74-19, Aug. 1974
			"The Developing Countries and U.S. Agriculture," in <u>A World Context: Policies and Approaches for the Next Decade</u> , eds. D. Gale Johnson and John A. Schnittker, New York: Praeger Publishers, 1974
		Projects and Principles Underlying the Economic Decision Making in Public Enterprises Administrative and Staff Training Program	"Irrigation Systems in Taiwan: Management of a Decentralized Public Enterprise," Staff Paper 75-15, July 1975

Table 3.—Continued

Name	Department	Project title	Publications
2. Osama Al-Zand	Ag. and Appl. Economics	International Olive Oil Economy	<p>"The Economics of Olive Oil and Oil-seeds in the Mediterranean Region," Staff Paper 73-5, Jan. 1973</p> <p>"Exploration and Analysis of Producer Prices of Olives in Tunisia—A Case of Pricing Imperfection," Staff Paper 73-6, Jan. 1973</p>
3. Uri Ben-Zion	Economics	The Effect of Aggregate Demand on Technological Change	with Vernon W. Ruttan, "Aggregate Demand and Technological Changes: A Macro-Economic Model of Induced Innovation," Staff Paper 74-25, Nov. 1974
		Family Size and Intergenerational Transfer	with Assaf Razin, "An Intergenerational Model of Population Growth," Discussion Paper 34, July 1973
4. Hans P. Binswanger	Ag. and Appl. Economics	Induced Innovation in Agricultural Development	<p>"The Measurement of Biased Technical Change in the Many Factor Case: U.S. and Japanese Agriculture," Staff Paper 72-28, Oct. 1973</p> <p>"Induced Innovation: A Critical Review of the Theory and Conclusions from New Evidence," Staff Paper 72-29, Dec. 1972</p> <p>"A Cost Function Approach to the Measurement of Factor Demand Elasticities of Substitution," Staff Paper 73-12, Jan. 1973</p>

Table 3.—Continued

Name	Department	Project title	Publications
4. Binswanger (continued)			"The Measurement of Technical Change Biases with Many Factors of Production," Staff Paper 73-25, Oct. 1973
			"A Microeconomic Approach to Induced Innovation," Staff Paper 74-3, Mar. 1974
			with Mitoshi Yamaguchi, "Some Structural Changes in the United States and Japanese Economies," Staff Paper 74-6, April 1974
			with Mitoshi Yamaguchi, "The Role of Sectoral Technical Change in Development: Japan 1880-1965," Staff Paper 74-7, April 1974
			"A Cost Function Approach to the Measurement of Elasticities of Factor Demand and Elasticities of Substitution," <u>Am. J. Ag. Ec.</u> , Vol. 56, No. 2, May 1974, pp. 377-386
			"The Measurement of Technical Change Biases with Many Factors of Production," <u>Am. Ec. Rev.</u> , Vol. 64, Dec. 1974, pp. 964-976
			"A Microeconomic Approach to Induced Innovation," <u>The Econ. J.</u> (Brit.), Dec. 1974, pp. 940-958
			with Mitoshi Yamaguchi, "The Role of Sectoral Technical Change in Development: Japan, 1880-1965," <u>Am. J. Ag. Ec.</u> , Vol. 57, May 1975, pp. 269-278

Table 3.—Continued

Name	Department	Project title	Publications
5. Richard N. Blue	Center for Comparative Studies	Political and Social Factors Associated with the Public Allocation of Agricultural Inputs in a Green Revolution Area: The Case of Rajasthan	with Yashwant Junghare, "Political and Social Factors Associated with the Public Allocation of Agricultural Inputs in a Green Revolution Area: The Case of Rajasthan," Center for Comparative Studies in Technological Development and Social Change, Office of International Programs, 1974 with Yashwant Junghare, "Winners, Losers, and Survivors in a Green Revolution Area: Some Lessons from the Rajasthan Experience," Center for Comparative Studies in Technological Development and Social Change, Office of International Programs, 1974
6. Peter K. Clark	Economics	Models of Speculative Markets: Instability in Commodity and Money Markets	"A Competitive Market Model for 'Futures' Price Determination," Discussion Paper 21, Aug. 1972
7. Dale C. Dahl	Ag. and Appl. Economics	Fertilizer Use, Distribution, and Manufacture in South Korea	with Bai Y. Sung and Young K. Shim, "Projection of the Demand for Fertilizer--Time Series Data Analysis," <u>J. Agr. Ec.</u> (Korea), Vol. 15, Dec. 1973, pp. 21-32 with Young K. Shim and Bai Y. Sung, "Estimation of Fertilizer Consumption in Korea, 1975-85," <u>Seoul National University Faculty Papers</u> , Vol. 3 (E), Mar. 1974, pp. 64-83
8. K. William Easter	Ag. and Appl. Economics	Regional Agricultural Planning in India	with Martin E. Abel, <u>Cropping Regions in India</u> , Econ. Dev. Center Bull. 73-1, June 1973

Table 3.--Continued

Name	Department	Project title	Publications
8. Easter (continued)			<p>"Improving Irrigation in India: The Neglected Opportunity," Staff Paper 73-33, Dec. 1973</p> <p>"Neglected Opportunities in Irrigation," <u>Economic and Political Weekly (India)</u>, Vol. 9, April 6, 1974, pp. 557-564</p> <p>"Returns from Investments in Improving Village Irrigation Systems: An Example from India," Staff Paper 74-13, July 1974</p> <p>"Field Channels: A Key to Better Indian Irrigation," <u>Water Resources Research</u>, Vol. 11, No. 3, June 1975, pp. 389-394</p>
9. Peter Gregory	Economics	Labor Markets in Japan and Brazil	<p><u>Industrialization and Wages in Japan</u>, Geneva: International Labour Office, Second Impression, 1973</p> <p>"Wage Structure in Latin America," Discussion Paper 4, July 1970</p>
10. Jerome W. Hammond	Ag. and Appl. Economics	Price Distribution System for Fertilizer in Tunisia	
11. James N. Henderson	Economics	General Equilibrium Model of Trade and Development	
12. Ralph H. Hofmeister	Economics	Travel grant	<p>"Growth and Unemployment in Latin America: Some Implications for Asia," paper prepared for AID, NESAP Employment Conference, Kathmandu, July 6-9, 1970</p>

Table 3.—Continued

Name	Department	Project title	Publications
13. Yashwant Junghare	Center for Comparative Studies	Political and Social Factors Associated with the Public Allocation of Agricultural Inputs in a Green Revolution Area: The Case of Rajasthan	with Richard N. Blue, "Political and Social Factors Associated with the Public Allocation of Agricultural Inputs in a Green Revolution Area: The Case of Rajasthan," Center for Comparative Studies in Technological Development and Social Change, Office of International Programs, 1974 with Richard N. Blue, "Winners, Losers, and Survivors in a Green Revolution Area: Some Lessons from the Rajasthan Experience," Center for Comparative Studies in Technological Development and Social Change, Office of International Programs, 1974
14. Lee R. Martin	Ag. and Appl. Economics	Administrative and Staff Training Program	"A Strategy for Agricultural Development in Thailand and Its Manpower Requirements," Staff Paper 74-25, Nov. 1974
15. Malcolm J. Purvis	Ag. and Appl. Economics	Class Structure and Technical Change: A Case Study of a Farming Locality in Northern Tunisia	
16. Assaf Razin	Economics	International Differences in Growth Rates and Education	"Investment in Human Capital under Uncertainty," Discussion Paper 19, July 1972 with Uri Ben-Zion, "An Intergenerational Model of Population Growth," Discussion Paper 34, July 1973

Table 3.—Continued

Name	Department	Project title	Publications
17. Terry L. Roe	Ag. and Appl. Economics	Agricultural Sector Analysis	with Patrick Yeung, "A CES Approach to the Measurement of Induced Factor Augmentation: A Test for Japan," Staff Paper 75-4, Jan. 1975 "Note: Modeling of Nonlinear Functions into a Linear Format," Staff Paper 75-9, June 1975
		Staff Training Program	
18. Vernon W. Ruttan	Ag. and Appl. Economics	Induced Innovation in Agricultural Development	with Yujiro Hayami, <u>Agricultural Development: An International Perspective</u> , Baltimore: The Johns Hopkins Press, 1971 "Research Institutions: The Organization Questions," <u>Institutions in Agricultural Development</u> , ed. Melvin G. Blase, Ames: Iowa State University Press, 1971 <u>Technology Transfer, Institutional Transfer, and Induced Technical and Institutional Change in Agricultural Development</u> , Proceedings of Conference on Agriculture in Development Theory, Bellagio, Italy, May 23-29, 1973 "Induced Technical and Institutional Change and the Future of Agriculture," <u>The Future of Agriculture: Theme Papers</u> , Oxford: Institute of Agricultural Economics for I.A.A.E., University of Oxford, Aug. 1973, pp. 16-33

Table 3.--Continued

Name	Department	Project title	Publications
18. Ruttan (continued)			<p>with Yujiro Hayami, "Factor Prices and Technical Change in Agricultural Development: The United States and Japan, 1880-1960," <u>J. Pol. Ec.</u>, Vol. 78, Sept./Oct. 1970, pp. 1115-1141</p> <p>with Yujiro Hayami, "Agricultural Productivity Differences Among Countries," <u>Am. Ec. Rev.</u>, Vol. 60, Dec. 1970, pp. 895-911 (EDC Reprint 70-4)</p> <p>with Yujiro Hayami, "Korean Rice, Taiwan Rice, and Japanese Agricultural Stagnation: An Economic Consequence of Colonialism," <u>Quar. J. Ec.</u>, Vol. 60, Dec. 1970, pp. 563-589 (EDC Reprint 70-3)</p> <p>"Technology and the Environment," <u>Am. J. Ag. Ec.</u>, Vol. 53, Dec. 1971, pp. 707-717 (EDC Reprint 71-3)</p> <p>with Yujiro Hayami, "Strategies for Agricultural Development," <u>Food Res. Inst. Stud.</u>, Vol. 11, No. 2, Dec. 1971, pp. 129-148 (EDC Reprint 72-3)</p> <p>with Yujiro Hayami, "Professor Rosenberg and the Direction of Technical Change: A Comment," <u>Ec. Dev. & Cul. Change</u>, Vol. 21, Jan. 1973, pp. 352-355</p> <p>with Yujiro Hayami, "Technical Transfer and Agricultural Development," <u>Tech. & Cult.</u>, Vol. 14, April 1973, pp. 119-151 (EDC Reprint 73-2)</p>

Table 3.—Continued

Name	Department	Project title	Publications
18. Ruttan (continued)		The Effect of Aggregate Demand on Technological Change	with Uri Ben-Zion, "Aggregate Demand and Technological Changes: A Macro-Economic Model of Induced Innovation," Staff Paper 74-25, Nov. 1974
19. T. Paul Schultz	Economics	Staff Training Program, including Workshops	<p>"Determinants of Fertility: A Micro Economic Model of Choice," Oct. 1973 (available from author only)</p> <p>"Explanation of Birth Rate and Changes over Space and Time," <u>J. Pol. Ec.</u>, Vol. 81, Mar./Apr. 1973, pp. S238-274 (EDC Reprint 73-1)</p> <p>"A Preliminary Survey of Economic Analyses of Fertility," <u>Am. Ec. Rev.</u>, Vol. 63, May 1973, pp. 71-78 (EDC Reprint 73-3)</p>
20. Joseph E. Schwartzberg	Geography	Economic, Social and Demographic Maps for a Historical Atlas of South Asia	
21. Mathew Shane	Ag. and Appl. Economics	Determinants of the Diffusion of New Production Activities in a Farming Locality of Northern Tunisia	with Richard M. Fraenkel, "Land Transfer and Technical Change in a Dualistic Agriculture: A Case Study from Northern Tunisia," Staff Paper 74-24, Oct. 1974
22. Young Kim Shim	Ag. and Appl. Economics	Fertilizer Use, Distribution and Manufacture in South Korea	with Bai Y. Sung and Dale C. Dahl, "Projection of the Demand for Fertilizer--Time Series Data Analysis," <u>J. Ag. Ec. (Korea)</u> , Vol. 15, Dec. 1973, pp. 21-32

Table 3.—Continued

Name	Department	Project title	Publications
23. Surjit S. Sidhu	Ag. and Appl. Economics	Technical Change in Wheat Production in the Punjab Regional Agricultural Develop- ment Planning in India	"Economies of Technical Change in Wheat Production in the Indian Punjab," <u>Am. J. Ag. Ec.</u> , Vol. 56, No. 2, May 1974, pp. 217-226 "Relative Efficiency in Wheat Produc- tion in the Indian Punjab," Staff Paper 73-11, Jan. 1973 "Relative Efficiency in Wheat Produc- tion in the Indian Punjab," <u>Am. Ec. Rev.</u> , Vol. 64, Sept. 1974, pp. 742- 751
24. Lance Taylor	Economics	Staff Training Program	with Marcelo Selowsky, "The Economics of Malnourished Children: A Study of Disinvestment in Human Capital," Discussion Paper 13, Dec. 1971
25. Besim Ustünel	Economics	Economic Growth in Sweden, Japan and Turkey	
26. Adolf Weber	Ag. and Appl. Economics	Induced Innovation in Agricultural Development	"Productivity Growth in German Agri- culture: 1850 to 1970" and "Appendix: Data on Productivity Growth in German Agriculture: 1850 to 1970," Staff Paper 73-1, Revised Aug. 1973

The UM Economic Development Center is directing its capacities to a series of significant problems. We are striving to achieve an integrated approach to these problems and a balanced portfolio of research projects and other developmental activities. Further progress toward these ends will be made in 1975/76, and emphasis will be given to strengthening our efforts in agricultural development planning and sector analysis.

The AID 211(d) Grant has been extended to September 30, 1976. We plan for this to be the terminal date of the Grant. Accordingly, all projects listed in tables I(a) and I(b), attached, will be completed or terminated by September 30, 1976 with respect to funding from the 211(d) Grant.

However, several areas of work are receiving priority attention during 1975/76 because of long-term interests on the part of staff members. These areas are:

- (a) Agricultural Sector Analysis - Terry Roe, Malcolm Purvis, David Nygaard, and Richard Todd
- (b) Regional Agricultural Development Planning in LDC's - Martin E. Abel, K. William Easter, George Norton, and Karen Gulliver
- (c) Resource Use - Lee R. Martin, K. William Easter, Frederick Thomas III, and Donald Genadek

We are hopeful that support for work in these areas beyond September 30, 1976 can be secured.

The resources of the Grant have enabled the University of Minnesota to supplement activities in agricultural development financed from other sources and to develop linkages with institutions in developing countries. The Grant has permitted us to engage in activities which complement those

financed from such sources as the University of Minnesota-AID contract in Tunisia, the Ford Foundation, the Rockefeller Foundation, and the Agricultural Development Council, Inc. Resources from the Grant have helped to develop or strengthen relationships with institutions in developing countries such as Korea, Tunisia, Thailand, the International Rice Research Institute, and CIMMYT. Looking to the future, we shall try to develop mechanisms whereby the institutional capability developed at the University of Minnesota under the Grant will be maintained and utilized by AID, other development organizations, and developing countries.

Talent Sharing

During the past year efforts have been made to increase the participation of University of Minnesota faculty members in the Talent Sharing Arrangement of the 211(d) Grant; i.e., direct participation of faculty members in the program of work of the Agricultural Economics and Sector Analysis Division, Technical Assistance Bureau of AID.

Lee R. Martin is working with the Economic and Sector Planning Division, Technical Assistance Bureau, Agency for International Development, to help the Division develop procedures for working on natural resource subsector analyses in selected LDC's. He was stationed in Washington for 5 weeks in May and June, and spent 3 weeks in July and August on assignment with TAB, and will spend 8 months, from September 1975 through May 1976, in Washington with the Economic and Sector Planning Division.

We also anticipate discussions with ESP/TAB in 1975/76 concerning their utilization of additional University of Minnesota staff resources.

Involvement of Minority Personnel and Women

The following persons of U.S. citizenship involved with the Grant would qualify as either minority persons or women:

Faculty

Professor Anne O. Krueger (women)

Support staff

Ms. Mary Strait (women)

Ms. Jan Onsagar (women)

Ms. Barbara Miller (women)

Graduate student

Ms. Karen Gulliver (women and American Oriental)

The University of Minnesota is an equal opportunity employer. We have experienced no difficulties in employing qualified women and minority group persons under the Grant.

Index Linking Detailed Budget Statements in Tables I(a) and I(b) to
Annual Report: 1975

Table I(a)

- Fertilizer Use, Distribution and Manufacture in South Korea**
p. 31 (Dahl, Shim, Sung, Park)
- The Price and Distribution System for Fertilizer in Tunisia**
p. 32 (Hammond, Good)
- Determinants of the Diffusion of New Production Activities in a Farming
Locality in Northern Tunisia**
p. 18 (Purvis, Fraenkel)
- Sector Analysis as an Instrument for Developing a Planning Process**
p. 27 (Roe, Klein)
- The Effect of Foreign Trade and Public Institutions on the Extent and
Direction of Technical Change in Developing Countries**
p. 28 (Roe, Nygaard)

Table I(b)

- Regional Agricultural Development in India: A Comparative Study**
p. 15 (Abel, Master, Norton)
- A General Equilibrium Model of International Production and Trade**
p. 29 (Henderson)
- Economies of Scale and Production Function in Korean Manufacturing**
p. 16 (Nam)
- An Economic Analysis of Milk Production in Southern Chile**
p. 24 (Zegers)
- Possible International Commodity Agreement**
p. 19 (Underwood)
- Green Revolution: The Tunisian Experience**
p. 33 (Cochrane, Gafsi)
- Shadow Pricing for Public Enterprises**
p. 25 (Warr)
- The Effect of Nonagricultural Policies on Argentine Agriculture**
p. 26 (Marquez-Ruarte)

Table I(a)
 Budget Detail for AID Program I
 Agricultural Economics Research and Training Program, July 1, 1974-June 30, 1975

Research Projects	Personnel	AID 211(d) Grant Support					Other Support	
		Salary and fringe benefits	Computer and data processing	Travel and expenses	Supplies and equipment	Totals	Amount	Source
Fertilizer Use, Distribution and Manufacture in South Korea								
Staff (U of M)	Dale C. Dahl			\$ 925.25	\$ 32.30	\$ 957.55		
Research Assistant	Sang-Woo Park		342.47		161.73	504.20		
Staff (Korea)	Young K. Shim	\$ 699.00*			327.91*	1,258.24		AID/Korea
Research Assistant	H. Oh	251.16*		231.33		251.16		
Interviewers-Enumerators		351.70*				351.70		
The Price and Distribution System for Fertilizer in Tunisia								
Research Assistant	Dale L. Good	2,484.00	311.56			2,795.56		
Class Structure and Technical Change: A Case Study of a Farming Locality in Northern Tunisia								
Research Specialist	Richard Fraenkel	3,841.35			167.12	4,008.47		
Resource Use								
Staff	K. William Easter	7,480.13				7,488.62		
	Lee R. Martin	5,256.50			8.49	5,256.50		
Graduate Training								
Staff	Terry Roe	3,901.00	45.00	750.47	146.16	14,842.63		
	Harold Klein			258.83		258.83		

Table I(a) -- Program I (continued)

Research Projects	Personnel	AID 211(d) Grant Support				Totals	Other Support	
		Salary and fringe benefits	Computer and data processing	Travel and expenses	Supplies and equipment		Amount	Source
Program Support and Administration								
Staff	Martin E. Abel			\$ 147.25	\$ 526.19	\$ 673.44		
Secretarial Services	Mary Strait	\$ 4,824.97				4,824.97		
Editorial and Clerical Services	Barbara Miller	11,264.44				11,264.44		
Miscellaneous Clerical		162.40				162.40		
Supplies and Equipment					430.07	430.07		
Printing Charges					876.98	876.98		
PROGRAM I TOTALS		\$50,516.65	\$ 699.03	\$2,313.13	\$2,676.95	\$ 56,205.76		

*Under Memorandum of Agreement, Dr. Young K. Shin, 7/1/74-12/31/74.

Unofficial Budget Summary
 Department of Agricultural and Applied Economics
 June 25, 1975

Table I(b)
 Budget Detail for AID Program II
 Development Policy Program, July 1, 1974-June 30, 1975

Research Projects	Personnel	AID 211(d) Grant Support					Other Support	
		Salary and fringe benefits	Computer and data processing	Travel and expenses	Supplies and equipment	Totals	Amount	Source
Regional Agricultural Development in India:								
A Comparative Study								
Research Assistant	Karen Gulliver	\$ 3,174.00				\$ 3,174.00		
Research Assistant	George Norton	5,244.00				5,244.00		
Data Processing			\$2,179.64			2,179.64		
Supplies					\$ 547.60	547.60		
A General Equilibrium Model of International Production and Trade								
Staff	James M. Henderson	5,378.85				5,378.85		
Research Assistant	John Scarbrough	1,583.55			11.20	1,656.92		
Economies of Scale and Production Function in Korean Manufacturing								
Research Assistant	Chong Nam	1,242.00				1,242.00		
Economic Demography, Developments, and Human Capital								
Staff	T. Paul Schultz	23,452.50	260.93			23,713.43		
Research Assistant	H. Shimamura						\$ 1,863.00	R.F.
Research Assistant	E. Falaris						2,484.00	R.F.
Research Assistant	B. Bental						2,070.00	R.F.
Research Assistant	F. Parks						1,581.00	R.F.

Table I(b) -- Program II (continued)

Research Projects	Personnel	AID 211(d) Grant Support				Totals	Other Support	
		Salary and fringe benefits	Computer and data processing	Travel and expenses	Supplies and equipment		Amount	Source
Research Assistant	B. Kugler						\$ 3,850.11	R.F.
Research Assistant	A. Strass						612.00	R.F.
Research Assistant	R. Shakatko						1,437.00	R.F.
Research Assistant	G. Tauchen						1,589.76	R.F.
Data Processing							2,417.49	R.F.
Travel and Expenses							1,761.68	R.F.
Supplies and Equipment							4,077.89	R.F.
An Economic Analysis of Milk Production in Southern Chile								
Research Assistant	Cristian Zegers		\$ 566.07	\$ 2,624.16	\$ 1,352.44	\$ 4,542.67		Ford F. iv. Austral de Chile
Possible International Commodity Agreement								
Research Assistant	John Underwood	\$ 5,112.90	58.71	606.31	87.84	5,865.76		
Green Revolution: The Tunisian Experience								
Research Assistant	Salem Gafsi	3,293.78	,145.34		22.70	6,461.82		CIDMYT
Trade and Development Workshop								
Research Assistant	Ashok Kapoor	269.10	250.53		456.85	976.48		
Speakers						1,535.39		
Post Doctoral Fellows								
	Jorge Marquez-Ruarte	12,000.00				12,000.00		
	Peter Warr	13,333.60				13,333.60		

Table I(b) — Program II (continued)

Research Projects	Personnel	AID 211(d) Grant Support				Other Support		
		Salary and fringe benefits	Computer and data processing	Travel and expenses	Supplies and equipment	Totals	Amount	Source
Program Support and Administration								
Staff	Martin E. Abel	\$ 21,497.32		\$1,724.37		\$ 23,221.69		
Secretarial Services	Linda Hendrickson	2,683.89				2,683.89		
	Jan Onsager	6,441.99				6,441.99		
	Mary Strait	4,849.03				4,849.03		
Data Processing			\$ 230.00			230.00		
Supplies and Equipment					\$ 8,376.35	8,376.35		
PROGRAM II TOTALS		\$109,556.51	\$6,753.39	\$6,490.23	\$10,854.98	\$133,655.11	\$23,743.93	R.F.

Unofficial Budget Summary
Office of International Programs
July 17, 1975

Table II(a)
 AID Program - Agricultural Economics Research and Training Budget Summary, 1970/71 to 1972/73

Items	Actual July 1, 1970-June 30, 1971			Actual July 1, 1971-June 30, 1972				Actual July 1, 1972-June 30, 1973			
	Budgeted (1)	Spent (2)	Uncommitted balance (3)=(1)-(2)	Budgeted (4)	Budgeted plus carryover (5)=(3)+(4)	Spent (6)	Uncommitted balance (7)=(5)-(6)	Budgeted (8)	Budgeted plus carryover (9)=(7)+(8)	Spent (10)	Uncommitted balance (11)=(9)-(10)
1. Salaries	\$31,032	\$4,485	\$26,547	\$33,265	\$59,812	\$38,771	\$21,041	\$37,354	\$58,395	\$43,990	\$14,405
2. Fringe Benefits	2,909	232	2,677	3,104	5,781	1,820	3,961	3,334	7,295	1,790	5,505
3. Computer and Data Processing	2,000	38	1,963	2,500	4,463	1,047	3,416	2,500	5,916	1,342	4,574
4. Travel and Expense	2,000	307	1,693	3,000	4,693	3,927	766	3,000	3,766	5,633	-1,867
5. Supplies and Equipment	2,800	119	2,681	600	3,281	2,702	579	600	1,179	3,510	-2,331
TOTALS	\$40,741	\$5,181	\$35,561	\$42,469	\$78,030	\$48,266	\$29,763	\$46,788	\$76,551	\$56,265	\$20,286

Table II(a)--(continued)
 AID Program I - Agricultural Economics Research and Training Budget Summary, 1973/74 to 1974/75
 and Projected to September 30, 1976

Items	Actual July 1, 1973-June 30, 1974				Actual July 1, 1974-June 30, 1975*				Projected July 1, 1975-September 30, 1976**			
	Budgeted (12)	Budgeted plus carryover (15) =(11)+(12)	Spent (14)	Uncommitted balance (15) =(13)-(14)	Budgeted (16)	Budgeted plus carryover (17) =(15)+(16)	Spent (18)	Uncommitted balance (19) =(17)-(18)	Budgeted (20)	Budgeted plus carryover (21) =(19)+(20)	Committed (22)	Uncommitted balance (23) =(21)-(22)
1. Salaries	\$37,047	\$51,452	\$46,036	\$5,416	\$36,707	\$42,123	\$44,386	\$-2,263	\$47,517	\$45,254	\$43,536	\$1,718
2. Fringe Benefits	3,525	9,030	1,461	7,569	0	7,569	6,130	1,439	0	1,439	1,225	214
3. Computer and Data Processing	0	4,574	2,253	2,321	0	2,321	699	1,622	2,400	4,022	4,000	22
4. Travel and Expense	3,000	1,133	8,105	-6,972	11,174	4,202	2,313	1,889	3,800	5,689	5,600	89
5. Supplies and Equipment	6,000	3,669	4,081	-412	3,000	2,588	2,677	-89	6,050	5,961	5,846	115
TOTALS	\$49,572	\$69,858	\$61,936	\$7,922	\$50,881	\$58,803	\$56,205	\$2,598	\$59,767	\$62,363	\$60,207	\$2,158

*The original grant which was due to expire on June 24, 1975 was extended without additional funding until September 30, 1975.

**The grant was extended to September 30, 1976 with \$59,767 of additional funding provided to Program I.

Unofficial Budget Summary
 Department of Agricultural and Applied Economics
 June 25, 1975

Table II(b)
AID Program II - Development Policy Program Budget Summary, 1970/71 to 1972/73

Items	Actual July 1, 1970-June 30, 1971			Actual July 1, 1971-June 30, 1972				Actual July 1, 1972-June 30, 1973			
	Budgeted (1)	Spent (2)	Uncommitted balance (3)=(1)-(2)	Budgeted (4)	Budgeted plus carryover (5)=(3)-(4)	Spent (6)	Uncommitted balance (7)=(5)-(6)	Budgeted (8)	Budgeted plus carryover (9)=(7)+(8)	Spent (10)	Uncommitted balance (11)=(9)-(10)
1. Salaries	\$41,904	\$36,641	\$ 5,263	\$ 90,557	\$ 95,820	\$85,555	\$10,265	\$ 96,970	\$107,235	\$118,101	\$-10,866
2. Fringe Benefits	3,353	2,669	684	7,075	7,759	6,052	1,707	7,596	9,303	8,592	711
3. Computer and Data Processing	2,600	87	2,513	3,500	6,013	1,410	4,603	3,054	7,657	1,987	5,670
4. Travel and Expenses	6,400	4,364	2,036	11,000	13,036	1,928	11,108	12,500	23,608	1,949	21,659
5. Supplies and Equipment	4,500	2,023	2,477	2,000	4,477	4,552	-75	2,000	1,925	3,657	-1,732
TOTALS	\$58,757	\$45,784	\$12,973	\$114,132	\$127,105	\$99,497	\$27,608	\$122,120	\$149,728	\$134,286	\$15,442

Table II(b)--(continued)
 AID Program II - Development Policy Program Budget Summary, 1973/74 to 1974/75
 and Projected to September 30, 1976

Items	Actual July 1, 1973-June 30, 1974				Actual July 1, 1974-June 30, 1975*				Projected July 1, 1975-September 30, 1976***			
	Budgeted (12)	Budgeted plus carryover (13) =(11)+(12)	Spent (14)	Uncommitted balance (15) =(13)-(14)	Budgeted (16)	Budgeted plus carryover (17) =(15)+(16)	Spent (18)	Uncommitted balance** (19) =(17)-(18)	Budgeted (20)	Budgeted plus carryover (21) =(19)+(20)	Committed (22)	Uncommitted balance (23) =(21)-(22)
1. Salaries	\$103,866	\$ 93,000	\$105,079	\$-12,079	\$111,282	\$99,203	\$ 99,856	\$ -653	\$81,085	\$ 80,432	\$80,377	\$ 55
2. Fringe Benefits	8,163	8,874	9,645	-771	15,775	15,004	9,700	5,304	4,317	9,621	9,309	312
3. Computer and Data Processing	6,500	12,170	3,674	8,496	6,954	15,450	6,754	8,696	-5,000	3,696	2,500	1,196
4. Travel and Expenses	12,500	34,159	4,739	9,420 ^a	0	9,420	6,490	2,930	1,800	4,730	4,000	730
5. Supplies and Equipment	2,000	268	4,865	-4,597	27,500	22,903	10,855	12,048	-7,000	5,048	4,650	398
TOTALS	\$133,029	\$148,471	\$128,002	\$ 469	\$161,511	\$161,980	\$133,655	\$28,325	\$75,202	\$103,527	\$100,836	\$2,691

*The original grant which was due to expire on June 24, 1975 was extended without additional funding until September 30, 1975.

**Includes funds actually committed for the period July 1-September 30, 1975.

***The grant was extended to September 30, 1976 with \$75,202 of additional funding provided to Program II.

^a\$20,000 from travel and expense amount was transferred to amount budgeted for supplies and equipment in 1974/75.

Unofficial Budget Summary
 Office of International Programs
 July 17, 1975

AGRICULTURAL ECONOMICS RESEARCH AND TRAINING PROGRAM
PROGRAM I: 211(d) GRANT

	Salary 1975-76 ¹ (thru 9/30/76)
Genadek, Donald - Research Assistant 7/1/75-7/31/75	\$ 886.00
Thomas, Frederick - Research Assistant 7/1/75-6/30/76	5,611.39
Nygaard, David -- Research Assistant 7/1/75-6/30/76	6,866.50
Norton, George - Research Assistant 7/1/75-6/30/76	6,489.95
Gulliver, Karen - Research Assistant 7/1/75-6/30/76	5,611.39
Antiporta, Donato - Research Assistant 7/1/75-6/30/76	6,866.50
Zegers, Cristian - Research Assistant 7/1/75-6/30/76	4,000.00
Strait, Mary - Secretary 7/1/75-9/30/76 (1/2)	7,205.00
Fringe Benefits	1,224.85
	\$43,536.73
TOTAL SALARY	\$43,536.73
TOTAL FRINGES	1,224.85
	\$44,761.58
TOTAL	\$44,761.58

¹Fringe benefits for civil service are 17 percent and for full-time faculty they are 18.5 percent.

DEVELOPMENT POLICY PROGRAM

PROGRAM II: 211(d) GRANT

	Salary 1975-76 ¹ (thru 9/30/76)
Henderson, James M. - Professor 7/1/75-8/31/75	\$ 6,544.46
Fringe Benefits	1,210.72
Warr, Peter - Postdoctoral Fellow 7/1/75-7/31/75; 9/1/75-6/30/76	14,666.74
Marquez-Ruarte, Jorge - Postdoctoral Fellow 7/1/75-8/15/75	2,000.00
Underwood, John - Research Assistant 7/1/75-9/30/75	1,350.00
Vinuela Diaz, Julio - Research Assistant 9/1/75-6/30/76	5,759.00
Todd, Richard - Research Assistant 8/1/75-6/30/76	4,725.00
Abel, Martin E. - Professor 7/1/75-9/30/76	26,110.00
Fringe Benefits	4,830.00
Strait, Mary - Senior Secretary 7/1/75-9/30/76	7,205.00
Fringe Benefits	1,224.85
Onsager, Jan - Senior Secretary 7/1/75-9/30/76	12,017.00
Fringe Benefits	2,043.00
TOTAL SALARY	\$80,377.20
TOTAL BENEFITS	9,308.57
TOTAL	\$89,685.77

¹ Fringe benefits for civil service are 17 percent and for full-time faculty they are 18.5 percent.