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Cijellmark
Cipri: 7/30 for
Babb by Morales
MAY 20 1980

ACTION MEMORANDUM FOR THE DEPUTY ASSISTANT ADMINISTRATOR FOR FOOD AND NUTRITION,
BUREAU FOR DEVELOPMENT SUPPORT

FROM: DS/AGR, Richard R. Solem

THRU: DS/PC, Bernard Chapnick

PD-MO-206

cc: [unclear]
Babb
[unclear]

SUBJECT: Specific Support Grant AID/DSAN-G-0086, Risk, Technology, Adoptions and Controllable Institutional and Environmental Factors for Low-Income Farmers in Developing Economies with the University of Missouri

Problems: Your approval is needed to extend the termination for Grant AID/DSAN-G-0086 with the University of Missouri from April 30, 1980 to June 30, 1980. This extension requires no additional funding.

Discussion: An extension of time for completion of this project is due to the following reasons:

1. The earthquakes which occurred in Colombia during the end of 1979 and beginning of 1980. These earthquakes closed the road to Southern Huila and prevented travel to study sites for approximately two months. Collection of data as planned in the follow-up survey was therefore delayed.
2. The Colombian political situation and unrest within the country brought with it potential difficulties associated with travel. Under these circumstances the contract team was reluctant to schedule field visits during February and March 1980.
3. Analysis of data was dependent upon computer hardware being put in place by CIAT. CIAT experienced some delay in setting up their new systems and project work was also delayed as a result.

DS/AGR believes these unforeseen events were beyond the control of the contractor and that the time extension is justified.

Recommendation: That you approve this request for a two (2) month unfunded extension of Grant AID/DSAN-G-0086 by signing the attached PAF.

Attachment:

PAF

U. of Missouri formal request for project extension.

Clearances:

DS/AGR/EPP:REhrich	_____	Date	_____
DS/AGR:TO'Hare	_____	Date	_____
DS/AGR:SEngberg	_____	Date	_____
DS/PO:ASilver	_____	Date	_____

DS/AGR/EPP:JCDay:mmb:4/24/80:X58945

1

AGENCY FOR INTERNATIONAL DEVELOPMENT
PROJECT AUTHORIZATION AND REQUEST
FOR ALLOTMENT OF FUNDS PART I

1. TRANSACTION CODE

C A - ADD
C - CHANGE
D - DELETE

PAF

2. DOCUMENT CODE
5

3. COUNTRY/ENTITY

DS/AGR

4. DOCUMENT REVISION NUMBER

2

5. PROJECT NUMBER (7 digits)

931-1157.11

6. BUREAU/OFFICE

A SYMBOL

B. CODE

DSB

10

7. PROJECT TITLE (Maximum 40 characters)

Risk/Technology/Inst. Factors-Poor Farmers

8. PROJECT

APPROVAL

DECISION

ACTION TAKEN

A

A APPROVED
D DISAPPROVED
DE DEAUTHORIZED

9. EST. PERIOD OF IMPLEMENTATION

YRS. 0

QTRS 1

10. APPROVED BUDGET AID APPROPRIATED FUNDS (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		Cumulative E. 12/31/79		H. 1st FY 80		K. 2nd FY 81	
		C GRANT	D LOAN	F GRANT	G LOAN	I GRANT	J. LOAN	L GRANT	M. LOAN
(1) FN	185 I	052	-	35	-	0	-	0	-
(2)									
(3)									
(4)									
TOTALS				35	-	0	-	0	-

A. APPROPRIATION	N. 3rd FY 82		O. 4th. FY 83		LIFE OF PROJECT		11. PROJECT FUNDING AUTHORIZED		A. GRANT	B. LOAN
	O. GRANT	P. LOAN	R. GRANT	S. LOAN	T. GRANT	U. LOAN	(ENTER APPROPRIATE CODE(S)) 1 - LIFE OF PROJECT 2 - INCREMENTAL LIFE OF PROJECT		1	
(1) FN	0	-	0	-	35	-				
(2)										
(3)										
(4)										
TOTALS	0	-	0	-	35	-	C. PROJECT FUNDING AUTHORIZED THRU		FY 7 9	

12. INITIAL PROJECT FUNDING ALLOTMENT REQUESTED (\$000)

A. APPROPRIATION	B. ALLOTMENT REQUEST NO.	
	C. GRANT	D. LOAN
(1)		
(2)		
(3)		
(4)		
TOTALS		

13. FUNDS RESERVED FOR ALLOTMENT

TYPED NAME (Chief, SER/FM/FSD)

SIGNATURE

DATE

14. SOURCE/OR.GIN OF GOODS AND SERVICES

000 941 LOCAL OTHER

15. FOR AMENDMENTS, NATURE OF CHANGE PROPOSED

This amendment extends the life of project AID/DSAN-G-0086 for two (2) months with the University of Missouri from April 30, 1980 to June 30, 1980. No additional funds are required for this extension.

FOR PPC/PIAS USE ONLY	16. AUTHORIZING OFFICE SYMBOL	17. ACTION DATE	18. ACTION REFERENCE (Optional)	ACTION REFERENCE DATE
		MM DD YY		MM DD YY

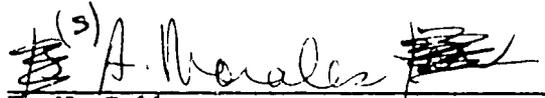
PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS
PART II

ENTITY : DS Bureau

PROJECT : Risk, Technology Adoption and Controllable Institutional and
Environmental Factors for Low-Income Farmers in Developing
Economies

PROJECT NO: 931-1157.11

I hereby authorize a two (2) month extension of Grant AID/DSAN-G-0086
from April 30, 1980 to June 30, 1980. No additional funds are required
for this extension.


~~Ann Morales~~ Ann Morales
Deputy ~~Assistant Administrator~~ Director,
~~for Food and Nutrition~~ DS/PO
Bureau for Development Support

Date: 5/30/80

Clearances:

DS/AGR/EPP:RLEhrich	_____	Date	_____
DS/AGR:SEngberg	_____	Date	_____
DS/AGR:RRSolem	_____	Date	_____
DS/AGR:TO'Hare	_____	Date	_____
DS/PO:BChapnick	_____	Date	_____
DS/PO:ASilver	_____	Date	_____



UNIVERSITY OF MISSOURI-COLUMBIA

Department of Agricultural Economics

200 Mumford Hall
Columbia, Missouri 65211
Telephone (314) 882-2831

Handwritten note:
I will discuss my letter to a group
you should have received the
report. Jack. 2.12.80.

March 24, 1980

Gustav Elterich
AID
ES/AG/EST/RP 403
Department of State
Washington, D.C. 20523

Dear Jack:

As you may have discerned from the fact that I have not filed additional progress reports based on our AID project AID/DSAN G 0086, I anticipate experiencing difficulty in meeting the contract date. We are making progress on the research project but have been hindered by a number of factors beyond our control. These include:

1. The earthquake which occurred during the end of 1979 and the beginning of 1980. These earthquakes closed the road to Southern Huila and made it impossible for the project research associate to visit Huila for a period of about two months. This delayed the data collection process associated with the second schedule.
2. The political situation in Colombia. In view of the existing uncertainty, I had felt that it was inappropriate to travel to Colombia during February and March of this year. I understand from the personnel at CIAT that I could have been overly cautious. On the other hand, my inclination was to be rather careful.
3. CIAT has been in the process of transferring computer systems. This process as always, has taken considerably longer than was anticipated. For this reason, the programming work was delayed.

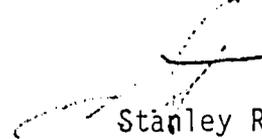
It now appears that we will not be finished with the contract for approximately two more months. To be safe this time, I would like to have the contract date extended through June of 1980. As with the previous request, the difficulty is not associated with resources that are being applied to the research project but with the timing. We have attempted to incorporate a substantial amount of primary information in the research project. Due to the location of the research site, this has taken longer than I had anticipated.

Gustav Elterich
March 24, 1980
Page 2

We have all of the primary data and have nearly completed the programming runs. Thus, I anticipate no difficulty in meeting the June 30, 1980 date. Uncontrollable factors generating uncertainty with respect to timing are now not of consequence in completing the contract. We now simply have to complete the programming and write up the required reports. Of course, if we have ample time the quality of the reports will be substantially improved.

I hope this additional extension of the contract gives you no difficulty. I have attempted to fully coordinate our efforts with those of the Bean Team at CIAT. In doing this, it has been necessary for me to accommodate to their time schedule. The result of this coordination and the uncontrollable factors mentioned above have been that the contract could not be completed in the time frame anticipated. I believe the benefits of the coordinated research effort outweigh the costs of not completing the contract on time. The contract costs of course remain the same.

Sincerely,



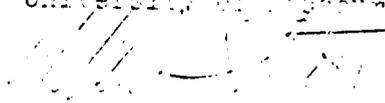
Stanley R. Johnson
Professor

SRJ/bb

RESEARCH PROPOSAL

RISK, TECHNOLOGY ADOPTION AND CONTROLLABLE INSTITUTIONAL
AND ENVIRONMENTAL FACTORS FOR LOW INCOME
FARMERS IN DEVELOPING ECONOMIES

The Curators of the
University of Missouri


H. KENT SHELTON
Assistant Vice President
and Comptroller


Stanley R. Johnson

 AUG 16, 1978
Date

RESEARCH PROPOSAL

Risk, Technology Adoption and Controllable Institutional and Environmental Factors for Low Income Farmers in Developing Economies

W. Whitney Hicks and S.R. Johnson
University of Missouri, Columbia

Introduction

It is becoming increasingly recognized that risk aversion is a major factor in the production decisions of low income farmers in developing countries. Evidence on levels of risk aversion is at present somewhat limited (Dillon and Scandizzo [1978], Roumasset [1976]) and highly dependent upon specialized utility function assumptions (Magnusson [1969]). However, the larger expected yields and increased purchased input costs of new technology options have served to emphasize this behavioral characteristic of low income farmers as a potentially important factor in adoption decisions (Dillon and Anderson [1971], Schuller [1971]).

The prospect of risk averse behavior presents major problems for policies designed to improve the welfare of low income farmers by fostering development of new technologies and encouraging their adoption. For such policies to be successful, the new technologies introduced must result not only in increases in anticipated yields and/or net returns per farming unit but also provide for a dispersion in these variables which does not result in a prohibitively high risk premium. If the uncertainty associated with the new technology is high, the risk averse farmer may require a risk premium which is sufficiently large that the traditional farming methods remain the more attractive alternative (Roumasset [1977]).

Much of the new technology for low income farmers in developing economies which has been introduced during the past two decades unfortunately has not been tailored to the risk averse behavior of the decision makers. First, seeds and cultivation methods which could increase expected yields were introduced. Low income farmers when presented with the new technologies and/or alternatives afforded by the new varieties and cultivation methods have frequently continued to find the traditional practices more attractive (Schulter [1971], Hiebert [1974]). Secondly, educational programs and temporary incentive systems to promote the adoption of the new technologies have had similarly disappointing impacts (Evenson, et al. [1976]). The result has been that new technologies with demonstrated potential for increasing expected incomes of the low income farmers and in many cases the result of years of development have remained unused (Anderson [1974, 1974a]).

There are two options available to private and governmental agencies that have sponsored these technology development efforts and/or are committed to the improvement of income levels for low income farmers. The first is to utilize the information from the accumulated experience and attempt to develop varieties and cultivation methods that the risk averse low income farmers will find attractive and accordingly adopt. This is likely to be a process which may require considerable time and expense. A second alternative involves recognizing that the institutional setting within which the low income farmer operates has an important bearing on the attractiveness of the various technologies available for crop production (Johnson [1977]). On recognizing this factor, it is apparent that an additional way to improve the welfare of the low income farmers by providing for the adoption of new technologies is through the modification of these institutions (AID [1977]).

Examples of institutions for which changed policies may alter attitudes

towards technology adoption are: marketing boards, credit, production cooperatives, land reform, altered programs for extension and information dissemination, provision for off-farm income generating alternatives, crop insurance, direct subsidies to younger and older family members, etc. The new technologies in conjunction with these changed environmental factors may turn out to be attractive to the low income farmers who formerly rejected them. Such options provide a basis for temporizing until technologies more consistent with risk averse behavior and the existing institutional settings can be developed and as well new policy instruments for promoting increased production and standards of living for low income farmers.

Although the added policy options provided by the modification of institutions appear attractive, they are at the same time potentially expensive and perhaps difficult to initiate. For this reason it would seem to be useful to evaluate the implications of these institutional factors for technology adoption on an experimental basis before advocating them as policy instruments for achieving development objectives. It is the construction and application of such experimental models which is the objective of the proposed research project. A normative optimizing model which incorporates risk aversion will be developed and applied to determine the potential impact of changed institutional settings on the attractiveness and adoption of new technologies. Outcomes from the experiment should have immediate consequences for policies designed to promote the adoption of new technologies. Furthermore, through a broadening of the conceptual framework to include added controllable factors, longer run implications for the research endeavors designed to produce new and more desirable technologies and cultivation methods can be investigated.

Methods

The normative model used as a basis for the experiments will be of the portfolio or risk programming type (Anderson [1976], Hazell and Scandizzo [1977], Johnson [1967]). Physical responses from time series and cross section data will be used to construct estimates of yield distributions for the various new and traditional technologies available in a particular region (Anderson [1973, 1974]). With these yield distribution estimates, information on the associated input levels, input and output prices (themselves possibly given as probability distributions) and appropriate constraints on fixed factors, standard risk programming models can be developed. Risk aversion parameters for low income farmers can be introduced from previous studies (Dillon and Scandizzo [1978]) or determined implicitly by considering the new and existing options and forcing the solution implying the maintenance of traditional methods within the framework of the risk programming problem. Brink and McCarl [1978] have recently shown that the latter alternative, although complicated by noncontrolled factors, produced useful results for a group of corn belt farmers in the U.S. Some combination of the two approaches for incorporating the implications of risk averse behavior would seem appropriate for specializing the model to a particular region but utilizing the results from previous though not necessarily similar experiments.

With yield response data for the new and established technologies, input costs, output prices, and fixed factors at representative levels and an appropriate risk aversion coefficient, the potential for modifying the institutional setting to encourage new technology adoption can be considered. Using a risk programming formulation the proposed changes in institutions or the environmental conditions can be analyzed for their potential impacts on: net

returns from alternative enterprises and their distributions, the production decisions for representative farms, and the financial status of the farms and/or family units (Elton and Gruber [1972], Just and Pope [1976], Hazell and Scandizzo [1975], O'Mara [1971], Myren [1970]). The institutional and environmental changes can be structured to permit introduction into the risk programming model by altering the constraints, prices, and for example as in the case of off farm income sources, the introduction of new income generating activities. Resulting solutions can be examined for an ex ante analysis of the potential impact of the prescribed changes in institutions and environmental variables on the adoption of new technologies and the corresponding effect on the income levels of the representative low income farmers. By positioning the representative low income farmers to characterize farm types in the region, the results of the risk programming models can be analyzed for their implications for supply response.

On analyzing such modifications of the setting within which the low income farmers make their production decisions, information can be gained to provide guidance for management strategies and policy actions (Anderson, et al. [1977], Halter and Dean [1965]). Specifically, there are three policy areas in which the information generated from the experiments can be applied:

- (1) Selection of institutional or environmental factors to modify as a basis for encouraging new technology adoption and the improvement of income levels for low income farmers and the region in which they operate.
- (2) Allocation of limited governmental resources to technology development; with the added control variables provided by the environmental factors, benefits and costs of various approaches to the adoption problem can be investigated--including the development of new varieties and cultivation practices.

- (3) Direction of efforts to develop improved varieties and methods; by applying the model, characteristics that the new varieties and cultivation methods must have to assure adoption can be approximated. This alternative can be important in providing for a feedback between the farmers in the region, vis their modeled production decisions, and the agencies attempting to develop the new technologies.

Thus, the method proposed has the advantage of providing ex ante information for immediate policy action designed to change environmental and/or institutional variables as well as considerable facility for use as a research planning device.

Application

The methods just described will be applied in the development of prototype models at the firm and regional level based on information now available at the Centro Internacional de Agricultura Tropical in Palmira, Colombia (CIAT). At the firm level, the models will utilize yield data on new and traditional technologies and resource situations of representative farms and families. It is presently anticipated that the number of firm models necessary to adequately represent the range of farm and family types in this region will be ten--five different resource situations and two family types. It has been indicated by John Sanders (vita attached) that these situations will be sufficient to characterize the region from which the data are drawn. The two family types are used to include different human resource characteristics and will be identified using demographic and socioeconomic variables, e.g., education, age of head, composition, etc.

After the firm models are constructed, verified and validated, a related

aggregate or regional model will be developed. This model will use area information on farm numbers and resources to weight the outcomes from the individual firm models. Finally, the institutional and environmental factors which can be manipulated by politically feasible policy actions will be studied at firm and regional levels for effects on output and income.

Data

Data for developing the necessary input, price and yield distributions are available at CIAT in Palmira and at La Selva experiment station in the province of Antioquia. The data set from CIAT consists primarily of a 1974-75 cross sectional survey of 177 bean producing farms located in the provinces of Antioquia, Huila, Nariño and Valle del Cauca, along with approximately five years of experimental plot data at Palmira. For each of the surveyed farms information about agrobiological conditions for the crop, along with information on labor requirements, input mix, production costs, and financial services used or available was collected during four on-site visits by CIAT technicians. A brief summary of this information is contained in Appendix Tables 1 and 2.

The experimental data encompass about five years of bean production at the CIAT experimental plots in Palmira and at La Selva experiment station in the province of Antioquia. These data will be used as a basis for developing production coefficients and associated distributions in the quadratic programming model. Additional data on attitudes toward risk and family characteristics will come from a supplementary survey to be executed once the project is started. This more limited survey will be performed in cooperation with technicians working in the multidisciplinary Bean Project currently being implemented by CIAT and is designed to update the information from the 1975-75 survey.

A section pertinent to risk aversion will be specifically tailored to the socioeconomic conditions of the survey region and will follow a certainty-equivalence framework similar to that of Dillon and Scandizzo [1978].

Parameters of the input and yield distributions will be estimated using the time series derived from the experimental plots. Such distributions will be adjusted by means of the cross section survey in order to represent more closely the area farm operations. Price data used will be historical and experimental. Price information is available in published form from governmental sources, which will be employed to derive price distributions. The parameters of these distributions will then be perturbed on an experimental basis so that the sensitivity of the model solutions can be studied for price induced effects. In short the necessary models can be constructed by making apparently reasonable generalizations regarding family characteristics and resource bases. Furthermore, the results will be carefully documented so that the quality of the model for applied analysis and the possible generalization of major conclusions to other low income technology adoption situations will also be clear.

Firm Model

The firm models will be constructed using risk programming methods. Different models will represent alternative family and resource base situations. Information for representing the technology sets with which the firms may operate were discussed in the previous section. The objective function will be quadratic in parameters of the net income distribution generated by management decisions and the resource situation. Such models can be solved and analyzed using quadratic programming routines presently available at the University of Missouri.

Aggregate Model

The aggregate or regional model will be based on the firm models as components. This model will permit the study of various more general questions. That is, levels of output, subsidies, the distribution of costs of the various institutional programs, etc. In this regard attention will be focused on the output and income distributions. Do the more risky technologies, if adoption is induced, in fact result in increases in area income and a reduction in the variance of area income? Suppose the increased area output generates price pressures, then what will happen to area income? These are the types of questions to be raised in the aggregate model. The extent of this work will depend upon how well the firm models can be corroborated with the actual farm situation and the availability of data necessary for aggregating the firm models to represent the region. It should be emphasized that for an exploratory project of this size these results must be regarded as tentative.

Institutional Factors

Institutional factors to which the study might be addressed have been indicated in an earlier section. These in fact represent a menu from which to select the ones implemented in the prototype model. Present intentions are to focus on credit institutions (Lipton [1976]), marketing board type activities for stabilizing output prices (Hazell and Scandizzo [1975, 1977]), off-farm employment opportunities and income maintenance policies. In each case the policies will be analyzed for their risk spreading (among cooperating farmers or across enterprises on a particular farm) and risk transfer (to the government or marketing board) characteristics. At a regional level these factors will be related to supply response and variation in supply. The supply response model will of course be of a normative type, based on weighted outcomes of the programming models.

More particular description of the institutions must await our becoming familiar with the situation in the project area. The attempt will be to make these as realistic as time and resources permit. Some arbitrariness however does not represent a major limitation in the project outcome. The objective is to develop a prototype model and not do a detailed application for Colombia. It is hoped that the model once developed can transfer to other countries and locations and then be specialized to the applied policy questions.

Of the institutional factors selected for study, the off-farm employment and income maintenance alternatives can be most directly evaluated. For the former, activities can be included which will use family labor and generate income. The major complication in this case will be timing. Off-farm employment in agriculture is frequently available in periods when the opportunity cost for it in terms of the owner operated farm is highest. Constraints in the programming model will be introduced to reflect this characteristic of the off-farm demand for labor. Income maintenance programs can be included by bounding the distribution(s) of net returns. The implications of both of these factors should be to make risky alternatives more attractive.

For credit policies, two alternatives will be featured; price and non-price rationing. The major nonprice rationing instrument will be the debt/equity ratio. Optimizing mixes of the two rationing devices will be determined. The analysis in this context will focus on the effects of subsidized but nonprice rationed credit as against more freely available credit at market determined rates. Implications for usage, technology adoption and farm income and finances will be determined.

Finally, marketing boards can serve to spread risk and stabilize prices. Both of these potential effects will be studied. In the case of risk spreading, climatic diversity within the region will play an important role. For

price stabilization supply control measures are normally required. Such measures will be adapted to the markets in which the farmers in the region dispose of their crops. Both of these aspects of marketing boards, if administration costs are not prohibitive, should induce adoption of the "improved" technologies.

Simulations

Since the model is in fact a prototype, the simulations are especially important. They will indicate the sorts of results that can be anticipated from applications of the model and the range of situations to which it can be effectively applied. On a more specific level, the simulations will show the effects of the institutional or policy variables examined for the four bean producing areas of Colombia and their sensitivity to assumptions necessary to facilitate the application. Finally, simulations of the technology set will be undertaken to indicate how the model can be employed for developing and assessing research strategies. These exercises will be admittedly oversimplifying but present the option of specifying in a simulated context, (1) the characteristics of new technology would have to exhibit to result in adoption and (2) how adoption is related to controllable institutional factors.

The methods used in choosing the experimental factors for the simulations will follow the principles of experimental design. Results can then be examined in a response surface context. The development and presentation of results from the simulations using these response surface methods is especially important in the case of the prototype model since it allows simple and understandable communication of the capabilities and characteristics of the models.

Personnel

The two principal investigators on the project will be Professors W. Whitney Hicks and S.R. Johnson (resumes attached). Professor Hicks is Chairman of the Economics Department at the University of Missouri and has had substantial research experience with Mexico and other Central and South American countries. Professor Johnson is more experienced on optimization and estimation methods. In addition he has done work with the application of risk programming models in the context of farm decision problems for developed economies. As well, the project will use the services of Professor Melvin Blase (resume attached) who is familiar with technology adoption problems and the experience in Central and South America.

One research associate, Gustavo Arcia (resume attached) will be utilized in the project. Mr. Arcia is from Nicaragua. He will work on a part-time basis since he is also a student in the graduate program in Agricultural Economics at the University of Missouri. Mr. Arcia has an interest in the low income farmer program for developing economies and has assembled the training and skills necessary to complete the tasks associated with the project. Finally, he will be on site in Colombia during the major portion of the period that the project is underway.

Mr. Arcia plans to return to his native country on completion of this project. Thus, an added outcome of the project will be the development of an individual skilled in the construction and application of such models and who in the near future will be functioning in a policy making capacity in his country.

Specific Research Plan

The project is envisaged as covering a twelve month period. The specific tasks and outputs to be accomplished to satisfy the research objectives are outlined below. The information includes a description of the task, time at which it will be accomplished--in terms of months from the date of project initiation and a description of the output and an identification of the research personnel involved.

<u>Task</u>	<u>Initiate (months)</u>	<u>Complete (months)</u>
1. Data acquisition and organization	1	6
2. Development of programming model and software	1	3
3. Institutional and environmental factors summarized for implementation in programming model	2	6
4. Estimation of risk parameters	7	9
5. Policy analysis using institutional and environmental factors as controls	8	11
6. Policy analysis for planning technology development	8	12
7. Specialization of model for particular policy problems suggested by project area and planned actions targeted for low income farmers in other Central and South American countries	9	12

Each of the listed outputs will be in the form of a preliminary or progress report on the project.

<u>Outputs</u>	<u>Date (Month) of Completion</u>
1. Estimates of yield distributions and appropriate price, and input activities for existing and new technologies (Arcia, Johnson)	4

14

<u>Outputs</u>	<u>Date (Month) of Completion</u>
2. Theoretical statement of programming model and example or illustrative applications (Arcia, Johnson)	4
3. Description of possible institutional factors and specialization of associated effects on low income farmers summarized and prepared as input for risk programming model (Arcia, Hicks, Johnson)	6
4. Estimate of risk aversion coefficients for various farmer types found in the project area (Johnson)	6
5. Policy results for technology adoption with institutional and environmental factors as controls (Arcia, Hicks, Johnson)	8
6. Policy analysis for technology development planning (Arcia, Hicks, Johnson)	12
7. Analysis of factors listed in Items 6 and 7 for low-income farmer programs representative of those which are planned by selected Central and South American countries (Arcia, Blase, Hicks, Johnson)	12

Summary

The proposal has first developed the need for more carefully examining the role of institutional factors in studying the low income farmer-technology adoption problem. Then in a general context, it has been shown that the modeling capability for studying this aspect of the technology adoption problem in conjunction with risk aversion is available. Standard risk programming models specialized for the study of institutional factors can produce results useful in understanding their effect on adoption. The prototype model to be developed as a consequence of the present study has as a major function illustrating this claim. If the research is successful, it should be helpful in designing research plans and income improvement policies for low income

..... 20

farmers. Specifically, since the methods are standard the technology associated with the model should be easily transferable.

Limitations of the proposed project relate largely to the application. Given the resources requested for the project, the application to Colombia will be of somewhat limited use for applied policy analysis. It should be understood that the purpose of the application is the testing of the model. If the model applied on this test basis produces useful results then other more ambitious projects can be undertaken to support policies for dealing with low income farmer problems in an array of developing countries. Thus, the model will be applied to Colombia data but the project is more general in scope and objective.

Budget

Salaries and Wages:

Professional Staff		
*Blase (\$35,000/year) 10%	\$1,750	
Hicks (\$34,556/year) 10%	3,457	
*Johnson (\$39,965/year) 20%	3,965	
Research Associate		
Arcia, October 1978-September 1979 (three-fourth time)	(CIAT)**	
Computer Programmer (2 months)	1,600	
Coding of schedules, keypunching, verifying, copying data from experi- ment station records (8 months)	<u>6,000</u>	
	\$16,772	\$16,772

Travel:

Four trips Columbia, Mo. to Cali for collecting data and verifying survey information and formulating institutional and policy alterna- tives***	\$3,500	
Field work for updating 1974-1975 survey and collecting experiment station data	500	
Four trips Columbia, Mo. to Washington, D.C. for coordinating efforts with TA/AGR/AID	<u>1,200</u>	
	\$5,200	\$ 5,200
Communications		150
Supplies		200
Computer		900
Staff Benefits (@ 16% of wages and salaries)		<u>2,683</u>
		\$25,905
Total Direct		\$25,905
Indirect Cost (53.99% of wages and salaries)		<u>9,055</u>
Budget Total		\$34,960

*One half of salary contributed by the Agricultural Experiment Station.

**CIAT has agreed to assume Mr. Arcia's salary plus a living allowance for the period that he is in Colombia. They have reviewed the project proposal and support the research effort by the above contribution.

***As Mr. Arcia will be doing work with both the UMC personnel and John Sanders, one orientation trip with Mr. Arcia and Professor Johnson will be necessary. The remaining two trips will be used by Mr. Arcia in returning to the UMC campus for computing and analysis of results. Computer facilities and soft ware necessary for the programming are unavailable in Colombia.

SELECTED REFERENCES

- Anderson, J.R. "Sparse Data, Climatic Variability, and Yield Uncertainty in Response Analysis," AJAE, Vol. 55, 1973.
- _____. "Sparse Data, Estimational Reliability and Risk Efficient Decisions," AJAE, Vol. 56, 1974.
- _____. "Risk Efficiency in the Interpretation of Agricultural Production Research," Rev. Mktg. Agri. Econ., Vol. 42, 1974a.
- _____. Modelling Decision Making Under Risk. Paper for ADC Seminar on Risk and Uncertainty in Agricultural Development, CIMMYT, Mexico, 1976.
- _____, Dillon, J.L., and Hardaker, J.B. Agricultural Decision Analysis. Iowa State University Press, Ames, Iowa, 1977.
- AID. Conference on Crop Insurance Notes, 1977.
- Brink, L., and McCarl, B. "The Tradeoff Between Expected Return and Risk Among Cornbelt Crop Farmers," AJAE, Vol. 60, 1978 (forthcoming).
- Dillon, J.L., and Anderson, J.R. "Allocative Efficiency, Traditional Agriculture and Risk," AJAE, Vol. 53, 1971.
- Dillon, J.L., and Scandizzo, P.L. "Risk Attitudes of Subsistence Farmers in Northeast Brazil: A Sample Approach," AJAE, Vol. 60, 1978.
- Elton, E.J., and Gruber, M.J. eds. Security Evaluation and Portfolio Analysis. Prentice-Hall, Inc., Englewood Cliffs, N.J., 1972.
- Evenson, R.F., O'Toole, J., and Coffman, W.R. "Risk and Uncertainty as Factors in Crop Improvement Research." CIMMYT Conference on Risk and Uncertainty, March 1976.
- Halter, A.N., and Dean, G.W. "Use of Simulation in Evaluating Management Strategies Under Uncertainty," Journal of Farm Economics, Vol. 47, 1965.
- Hazell, P.B., and Scandizzo, P.L. "Farmer's Expectations, Risk Aversion, and Market Equilibrium Under Risk," AJAE, Vol. 59, 1977.
- _____. "Market Intervention Policies When Production is Risky," AJAE, Vol. 57, 1975.
- Hiebert, L.D. "Risk, Learning and the Adoption of Fertilizer Responsive Seed Varieties," AJAE, Vol. 56, 1974.
- Johnson, S.R. "A Re-examination of the Farm Diversification Problem," Journal of Farm Economics, Vol. 49, 1967.
- _____. "Risk and the Adoption of New Technology: Some Reflections on Research Alternatives," Seminar Notes, AID, 1977.

- Just, R.E., and Pope, R.D. "On the Relationship of Input Decisions and Risk". CIMMYT Conference on Risk and Uncertainty, March 1976.
- Lipton, M. "Agricultural Risk, Rural Credit, and the Inefficiency of Inequity". CIMMYT Conference on Risk and Uncertainty, March 1976.
- Magnusson, G. Production Under Risk: A Theoretical Study. Almqvist and Wiksells, Uppsala, Sweden, 1969.
- Myren, Delbert, ed. Strategies for Increasing Agricultural Production on Small Holdings. Centro Internacional de Mejoramiento de Maiz y Trigo, Mexico, D.F., 1970.
- O'Mara, G.T. "A Decision Theoretic View of the Microeconomics of Technique Diffusion in a Developing Country". Unpublished Ph.D. dissertation, Stanford University, 1971.
- Roumasset, J.A. Price and Risk: Decision Making Among Low Income Farmers. North-Holland/American Elsevier, 1976.
- Roumasset, J.A. "Risk and Uncertainty in Agricultural Development," Seminar Report No. 15, A.D.C., October 1977.
- Schulter, M. "Differential Rates of Adoption of the New Seed Varieties in India: The Problem of the Small Farm". Occasional Paper No. 47, Dept. of Ag. Econ., Cornell University, USAID Research Project, 1971.

Appendix Table 1.
 Characteristics of Bean Producing Farms,
 CIAT Survey, 1974-75

	Provinces			
	Valle	Huila	Nariño	Antioquia
Average Farm Size (Hectares)	91.7	29.5	9.2	4.4
Area in Cultivation (Hectares)	40.5	6.8	3.1	1.7
Area With Beans (Hectares)	22.6	4.1	1.8	1.5
Beans Production systems	Beans Only	30% of farms: Beans only 70% of farms: Bean-corn combination		
Type of Beans	Black Bush	Red Bush	Red Bush	Red Pole

Source: Ruiz de Londoño, Norha, *et al.* Limitantes a los Incrementos de productividad de Frijol a Nivel de Finca en Colombia. Mimeo, CIAT, 1978.

Appendix Table 2.

Technological Characteristics of Bean Production,
CIAT Survey, 1974-75

	Beans Only Valle	Beans-Corn Huila-Nariño	Beans-Corn Antioquia
Percent of Farmers Who Use:			
Insecticide	87	8	33
Fungicide	100	3	42
Certified Seed	52	2	0
Fertilizer	84	8	100
Herbicide	32	0	0
Irrigation	25	0	0
Farm Machinery	100	22	0
Credit	87	47	50
Technical Assistance	70	12	8
Labor			
Man-days/ha./year	58	220	193
Type of Labor (Percent of Total Labor)			
Family	1	45	4
Hired	99	55	96
Average Yields			
Beans (kg./ha.)	906	599	533
Corn (kg./ha.)	--	711	1473

Source: Ruiz de Londoño, Norha, *et al.* Limitantes a los Incrementos de productividad de Frijol a Nivel de Finca en Colombia. Mimeo, CIAT, 1978.

February, 1973

VITA

John H. Sanders, Jr.

Present Address:

CIAT
Apartado Aéreo 6713
Cali, Colombia
South America

Personal:

Education:

Dartmouth College, B.A. in Government, 1963
University of Kentucky, M.S. in Agricultural Economics, 1967
University of Minnesota, Ph.D. in Economics, December, 1973
Foreign Area Fellowship for dissertation research, November 1971 to January 1973 at the Institute of Agricultural Economics of the State Secretary of Agriculture, Sao Paulo, Brazil.

Employment Experience:

- Agricultural Economist in the Bean Program of CIAT (Centro Internacional de Agricultura Tropical). November 1976 to present. In collaboration with other Bean Program scientists evaluate the impact of actual and potential new technology in bean production and make an economic input into the design process of new technology.
- Ford Foundation Visiting Professor, Department of Agricultural Economics, Federal University of Ceará, August 1973-November 1976. At UFC taught Quantitative Methods (Econometrics and Programming) and advised graduate students. My research was in the areas of technological change and risk in Northeastern agriculture and small farmer problems.

- Research Assistant, Department of Agricultural and Applied Economics, the University of Minnesota, September, 1967 to November, 1971 and January 1973 to August 1973.
- Economist, Regional Studies Staff, Tennessee Valley Authority, Summer, 1967. Economics of human resource development.
- Research Assistant, Department of Agricultural Economics, The University of Kentucky, September 1965 to June 1967.
- Peace Corps, 1963-1964, Rural Community Development with the Centro de Reconversion Economica, Cuenca, Ecuador.

Publications:

- John H. Sanders, "Labor Mobility and the Depressed Area: The Eastern Kentucky Case," Journal of Human Resources, Fall 1969, 437-450.
- _____ and Richard C. Hoyt, "The World Food Problem - Four Recent Empirical Studies," American Journal of Agricultural Economics, February 1970, 132-135.
- _____ and F. L. Bein, "Agricultural Development on the Brazilian Frontier, Southern Mato Grosso," Economic Development and Cultural Change, Vol.24(3), April 1966, 593-610.
- _____ and V. W. Ruttan, "Biased Choice of Technology in Brazilian Agriculture," Chapter 10 in H. P. Binswanger and V. W. Ruttan, (eds), Induced Innovation, Technology, Institutions and Development (Johns Hopkins University Press: Baltimore), forthcoming, 1978.
- _____ and A. Dias de Hollanda, "Technology Design for the Semi-Arid Northeast of Brazil," Chapter 7 in A. Valdes, J. L. Dillon, and G. Scobie, (eds), Economics and the Design of Small Farmer Technology, (Iowa State University Press: Ames, Iowa), forthcoming, 1978.

Theses, Unrefereed Journals, etc.:

- John H. Sanders, "Some Aspects of the Economics of Return Migration with Reference to the Eastern Kentucky Coal Fields," unpublished Master's thesis, The University of Kentucky, 1967.
- Vernon W. Ruttan and _____, Surplus Capacity in American Agriculture, Special Report No.28; The University of Minnesota, Agricultural Experiment Station, August, 1968.

25

- _____ and Vernon W. Ruttan, "Another Look at the World Food Problem," Minnesota Agricultural Economist, No.515, February 1969.
- _____, "Income Maintenance Programs and Rural Poverty," Minnesota Agricultural Economist, No.533, August, 1970.
- _____ and Arley D. Waldo, "Help for the Poor-- Revamping the Welfare System," Minnesota Science, Vol.28, No.1, 1971, pp.6-10 and 15-16.
- _____ and Arley D. Waldo, "Benefit-Cost Analysis of Income Maintenance Proposals," Staff Paper p. 72-19, Department of Agricultural and Applied Economics, University of Minnesota, June 1972. 24 pages.
- _____, "Mechanization and Employment in Brazilian Agriculture, 1950-1971," unpublished Ph.D. Dissertation, University of Minnesota, December 1973.

Plus approximately twelve other publications in Portuguese and two forthcoming in Spanish in the CIAT series. This list is available upon request.

References:

- Dr. VERNON W. RUTTAN
Department of Agricultural and Applied Economics
231 Classroom Office Building
UNIVERSITY OF MINNESOTA
St. Paul, Minnesota 55101
- Dr. JOHN L. DILLON
THE UNIVERSITY OF NEW ENGLAND
Department of Agricultural Economics and Business Management
Armidale, N.S.W. 2351
AUSTRALIA
- Dr. EDUARDO VENEZIAN
Corporación para el Progreso
Av. El Golf 243
Santiago - CHILE
- Dr. ROBERT RUDD, HEAD
Department of Agricultural Economics
THE UNIVERSITY OF KENTUCKY
Lexington, Kentucky 40506

William Whitney Hicks

Department of Economics
University of Missouri
Columbia, Missouri 65201
Phone: (314) 882-4574

Personal Data:

Marital Status: Married, two boys (11 and 14)
Citizenship: United States

Education

Ph.D., Economics, Stanford University, 1960-64
M.S., Economics, Kansas State University, 1957-58
B.S., Political Science, Kansas State University, 1953-57

Professional Experience

1977-present
Chairman, Department of Economics, UMC
1976-77 Economist, Agency for International Development,
Washington, D.C.
1975-present
Professor of Economics, UMC
1968-75 Associate Professor of Economics, UMC
1972-73 Visiting Associate Professor, Stanford University
1968-69 Visiting Lecturer in Economics, Univ. of Penn.
1965-68 Assistant Professor of Economics, UMC
1964-65 Assistant Professor of Economics, Kansas State U.
1961-62 Teaching Assistant, Stanford University
1958-60 Research Assistant, Federal Reserve Bank of Kansas
City.
1962 Intern, Agency for International Development,
Washington, D.C.

Awards and Grants

Contract from the International Statistical Programs Center,
U.S. Bureau of Census, Department of Commerce, 1974-75,
for research on population and economic change in Mexico
(with S.R. Johnson).

Grant from the National Institute of Child Health and Human
Development, 1972-73, for research on Demographic and
Economic Interrelations in Mexico (with Dudley Kirk).

Grant from Ford and Rockefeller Foundation Program in Support of Social Science and Legal Research in Population Policy, 1972-73 (resigned to accept NICHD Grant).

Special One-Semester Leave with Pay for Faculty Improvement from the Graduate School, UMC for post-doctoral study at the Population Studies Center, Univ. of Pennsylvania.

Summer Research Grant from the Research Council of the Graduate School, University of Missouri, 1968, 71, 75.

Summer Research Grant from the Research Center of the School of Business and Public Administration, UMC, 1966, 1967.

Research Grant from the Agricultural Development Council, 1965-66.

Erhart Fellowship, 1963-64.

John and Elliot Wheeler Fellowship at Stanford, 1962-63.

Memberships

American Economic Association
Population Association of America
International Union for the Scientific Study of Population
Western Economic Association

Publications

Books:

Interrelations Between Population, Employment and Economic Development: A Bibliography, (The Agricultural Development Council, 630 Fifth Avenue, New York, N.Y. 10020, May 1973).

Articles:

"Wage Trends, Recreation, and National Health," (with Charles Geiss and Ben Londeree) Journal of Leisure Research, Second Quarter 1978

"Comment on Daniel A. Siever's 'Recent Fertility in Mexico: Measurement and Interpretation,'" Population Studies, March 1977.

"The Political Economy of Rural Development in Latin America: An Interpretation: Comment," American Journal of Agricultural Economics, August 1976.

"Reply to a Comment on 'Economic Development and Fertility Change in Mexico, 1950-70,'" Demography, February 1976.

"Economic Development and Fertility Change in Mexico, 1950-1970," Demography, August 1974.

"Reply to 'A Further Note on the Burden of Dependency in Low-Income Areas,'" Economic Development and Cultural Change, April 1971.

"Primary Exports and Economic Development: An Application of the Staple Theory to Sonora, Mexico," Canadian Journal of Agricultural Economics, July 1969.

"Quantity and Quality Components for Income Elasticities of Demand for Food," (with S.R. Johnson) American Journal of Agricultural Economics, December 1968.

"Exports and Regional Economic Growth: An Evaluation of the Economic Base and Staple Models," (with John M. Brazzel) Land Economics, November 1968.

"Agricultural Development in Northern Mexico, 1940-1960," Land Economics, November 1967.

"A Reproduction Function for Young Women in Mexico," Social and Economic Studies, June 1966.

"A Note on the Burden of Dependency in Low-Income Areas," Economic Development and Cultural Change, January 1965.

"'Griliches' Measurement of Productivity Growth in United States Agriculture: A Comment," Journal of Farm Economics, August 1964.

"Estimating the Foreign Exchange Cost of Untied Aid," The Southern Economic Journal, October 1963.

Papers Read

"Population of Mexico in 2001" (with Leon Hunter) presented at the Meetings of Southwestern Economics Association, Houston, April 1973

"Socio-economic Determinants of Fertility in Mexico: An Analysis of Change in Structural Relationships, 1950-1970," (with Agustin G. Del Rio and S.R. Johnson) presented at the meetings of the Population Association of American, Montreal, April 1976.

"Interrelations Between Economic and Demographic Change in Colonial Taiwan" presented at the meetings of the Western Economics Association, Las Vegas, June 1974.

"Population Growth and the Adoption of New Technology in Taiwanese Agriculture," presented to a seminar on The Role of Population Planning in General Economic Planning sponsored by the Southeast Asia Development Advisory Group, San Francisco, November 1973.

"Primary Producers' Response to Price in Northern Mexico," presented to a seminar on Historical Studies in the Development of Marketing Institutions, Europe and North America, sponsored by the Agricultural Development Council at Texas A&M University, November 1964.

VITA

Name: Stanley R. Johnson

Addresses: Economics Department
University of Missouri
Columbia, Missouri 65201
(314) 882-7036 and 882-2789

Education: B.A., Agricultural Economics, Western Illinois University, 1961.
M.S., Agricultural Economics, Texas Technological College, 1962.
Ph.D., Agricultural Economics, Texas A&M University, 1966.

Interests: Econometrics, Control Theory, Activity Analysis, Agricultural Economics

Experience: -- Research Assistant, Texas Technological College, 1961.
-- Research Assistant, Texas A&M University, 1962, 1963, 1964.
-- Assistant Professor, Department of Economics, University of Missouri, September 1, 1964 through August 1, 1966.
-- Associate Professor, Department of Agricultural Economics, University of Connecticut, August 1966 through August 1, 1967.
-- Associate Professor, Department of Economics and Agricultural Economics, University of Missouri, September 1967-August 1970.
-- Visiting Associate Professor of Agricultural Economics, University of California, Davis, January 1970-September 1970.
-- Professor, Departments of Economics and Agricultural Economics, University of Missouri, September 1970 to present.
-- Visiting Professor of Economics, Purdue University, September 1971-June 1972.
-- Chairman, Economics Department, University of Missouri, September 1972 to August 1974.
-- Economist (temporary position), Economics Branch, Agriculture Canada, Ottawa, June 1975 to September 1975.
-- Visiting Professor, Department of Economics, University of Georgia, September 1975 to June 1976.

Publications: (Journal Articles and Papers in Proceedings)

"A Re-Examination of the Farm Diversification Problem," S.R. Johnson, Journal of Farm Economics 49(3), pp. 610-621, August 1967.

"Stochastic Linear Programming and Feasibility Problems in Farm Growth Analysis," S.R. Johnson, K.P. Tefertiller and D.S. Moore, Journal of Farm Economics 49(4), pp. 908-919, November 1967.

"Quality and Quantity Components of the Income Elasticity of Demand for Food," W.W. Hicks and S.R. Johnson, American Journal of Agricultural Economics 50(5), pp. 1512-1517, December 1968.

54

- "Spatial Price Equilibrium and Price Variability," N. Eugene Engel and S.R. Johnson, Canadian Journal of Agricultural Economics 17(1), pp. 23-33, February 1969.
- "Temperature Modification and Cost of Electric Power Generation," S.R. Johnson, J.D. McQuigg and T.P. Rothrock, Journal of Applied Meteorology 8(6), pp. 919-926, December 1969.
- "Principal Components and Problems of Measuring Economic Relationships Which Include Climatic Variables," F. Benson and S.R. Johnson, Proceedings, Second National Conference on Weather Modification, American Meteorological Society, Santa Barbara, California, April 1970.
- "Agricultural Land Price Differentials and their Relationship to Potentially Modifiable Aspects of the Climate," S.R. Johnson and P.A. Haigh, Review of Economics and Statistics 52(2), pp. 173-180, May 1970.
- "Sources of Tax Revenues and Expenditures in Large U.S. Cities," S.R. Johnson and P.E. Junk, Quarterly Review of Economics and Business 10(4), pp. 1-17, December 1970.
- "Effects of Misspecifications of Log-Linear Functions when Sample Values are Zero or Negative," S.R. Johnson and G.C. Rausser, American Journal of Agricultural Economics 53(1), pp. 120-124, February 1971.
- "Spatial Price Equilibrium Location Arbitrage and Linear Programming," S.R. Johnson, in A. Zarley (ed.), Papers in Quantitative Economics, Lawrence: University of Kansas Press, 1971.
- "Random Coefficient Models and Carcass Pricing: A Comment," S.R. Johnson, et al., American Journal of Agricultural Economics 53(4), pp. 670-671, November 1971.
- "Effects of Misspecifications of Log-Linear Functions when Sample Values are Zero or Negative: A Reply," S.R. Johnson and G.C. Rausser, American Journal of Agricultural Economics 53(4), pp. 667-670, November 1971.
- "A Study of the Effect of Weather on Road Construction: A Simulation Model," W.J. Maunder, S.R. Johnson and J.D. McQuigg, Monthly Weather Review 99(12), pp. 939-945, December 1971.
- "The Effect of Weather on Road Construction: Applications of a Simulation Model," W.J. Maunder, S.R. Johnson and J.D. McQuigg, Monthly Weather Review 99(12), pp. 946-953, December 1971.
- "Applications of Linear Probability Models in Using Weather Forecasts to Plan Construction Activities," Proceedings, World Meteorological Association Conference on Construction and Climatology, Stockholm, September 1972.
- "Meteorological Diversity and Electric Load Diversity, A Fresh Look at an Old Problem," J.D. McQuigg and S.R. Johnson, Journal of Applied Meteorology 11(4), pp. 561-566, June 1972.
- "A Dynamic Decision Theoretic Bidding Model," E.D. Attanasi and S.R. Johnson, Proceedings, American Institute of Decision Sciences, 1972.

- "Normalization Rules and the TOLS Estimator," G.C. Rausser and S.R. Johnson, Proceedings, American Statistical Association, pp. 420-425, 1972.
- "Forecasting Work Conditions for Road Construction: An Application of Alternative Probability Models," E.D. Attanasi and S.R. Johnson, Monthly Weather Review 101(3), pp. 311-328, March 1973.
- "Structural Aspects of the Phillips Relation in the U.S. Economy," S.R. Johnson and P.E. Smith, Nebraska Journal of Economics and Business 11(4), pp. 101-120, Autumn 1972.
- "The Phillips Curve, Expectations and Stability in the Post W.W. II U.S. Economy," S.R. Johnson and P.E. Smith, Quarterly Journal of Economics and Business 13(3), pp. 85-92, Autumn 1973.
- "Forecasting Variations About Base Electric Loads on the Basis of Climatic Variables," S.R. Johnson, S. LeDuc and James D. McQuigg, Proceedings, Third Conference on Probability and Statistics in Atmospheric Science, American Meteorological Society, June 1973.
- "Increased Precision for Weather-Load Models for Long Term Planning of Large Interconnected Systems," James D. McQuigg and S.R. Johnson, Proceedings, American Power Conference, May 1973.
- "Price and Income Flexibilities and the Double Logarithmic Demand System," American Journal of Agricultural Economics 55(4), pp. 678-679, November 1973.
- "An Alternative Method for Pricing Pork Carcasses," Richard Green, Zuhair Hassan and S.R. Johnson, Canadian Journal of Agricultural Economics 21(3), pp. 1-6, November 1973.
- "Principal Components and the Problem of Multicollinearity," S.R. Johnson, S.C. Reimer and T.P. Rothrock, Metroeconomica 25(3), pp. 306-317, September-December 1973.
- "The Demand for Food in the United States," Z. Hassan, S.R. Johnson and R. Finley, Applied Economics 5(2), pp. 233-248, September 1973.
- "Further Evidence on the Structure of Consumer Demand in the U.S.: An Application of the Separability Hypothesis," Z. Hassan, S.R. Johnson and R. Finley, Southern Economic Journal 41(2), pp. 244-257, October 1974.
- "Parameter Variations Across Subsets in Simultaneous Equations Systems," G.C. Rausser and S.R. Johnson, Metroeconomica 26, pp. 226-244, January-December 1974.
- "Sequential Bidding Models: A Decision Theoretic Approach," Emil D. Attanasi and S.R. Johnson, Industrial Organization Review 3(1), pp. 43-55, Spring 1975.
- "On the Limitations of Simulation in Model Evaluation and Decision Analysis," Gordon C. Rausser and S.R. Johnson, Simulation and Games 6(2), pp. 115-150, June 1975.
- "The Theory of Price Determination in Government Industry Relationships: An Empirical Test," E.D. Attanasi and S.R. Johnson, Journal of Industrial Economics 23(4), pp. 313-320, July 1975.

"Expectations, Market Structuring and Sequential Bid Pricing," Emil D. Attanasi and S.R. Johnson, Southern Economic Journal 42(2), pp. 18-32, July 1975.

"An Intertemporal Comparison of Price and Income Elasticities for Food," Z.A. Hassan, S.R. Johnson and R.M. Finley, Canadian Journal of Agricultural Economics 23(3), pp. 47-58, November 1975.

"An Estimating Method for Models With Stochastic, Time Varying Parameters," S.R. Johnson and G.C. Rausser, Proceedings, American Statistical Association, pp. 356-361, 1975.

"A Numerical Analysis of a Classificatory Scheme for Monitoring Sealed Tender Markets," E.D. Attanasi and S.R. Johnson, Proceedings, American Statistical Association, pp. 227-232, 1975.

"Consumer Demand Parameters for the U.S.: A Comparison of Linear Expenditures, Rotterdam, and Double-Log Estimates," Zuhair A. Hassan and S.R. Johnson, Quarterly Journal of Economics and Business 16(1), pp. 77-92, Spring 1976.

"Leasing Policies for the Extractive Resources," E.D. Attanasi and S.R. Johnson, The Annals of Regional Science 10, pp. 36-49, July 1976.

"Norms for Bid Distributions in Sealed Tender Markets: An Approach Through Simulation," E.D. Attanasi and S.R. Johnson, Simulation and Games 7(4), pp. 439-464, December 1976.

"Discussion of Three Papers on Agricultural Sectoral Models," S.R. Johnson, American Journal of Agricultural Economics 59(1), pp. 133-136, February 1977.

"Principal Components and Regression Analysis: An Alternative Approach," R. Carter Hill and S.R. Johnson, Journal of Economics, 2, pp. 65-68, 1976.

"Component Selection Norms for Principal Components Regression," R.C. Hill, T.B. Fomby and S.R. Johnson, Communications in Statistics, 1977, A6(14):837-846.

"Urban Spatial Structure: An Analysis With a Varying Coefficient Model," S.R. Johnson and James B. Kau, Proceedings, American Statistical Association, January 1977.

"Principal Components Decomposition and Regression Analysis," R. Carter Hill and S.R. Johnson (forthcoming), The American Economist, 1977.

"Sin, Virtue and Externalities," P.E. Smith and S.R. Johnson, The Journal of Economics, 1977.

"Demand for Major Foods in Canada," Zuhair Hassan and S.R. Johnson, Canadian Farm Economics 12(2), pp. 7-15, April 1977.

"Systems Methods in Natural Resource Economics," G.C. Rausser, S.R. Johnson and C. Willis, Cybernetics, 1977 (forthcoming).

"Urban Density Functions: A Variational Approach," J.B. Kau and S.R. Johnson (forthcoming), Transportation Research Board Record, 1977.

"Direct Price Elasticity Estimates from Family Budget Data," Zuhair Hassan and S.R. Johnson, Canadian Journal of Agricultural Economics, 25(3), November 1977.

"MSE Evaluation of Ridge Estimators Based on Stochastic Prior Information," T.B. Fomby and S.R. Johnson, Communications in Statistics, 1977, A6(13):1245-1258.

"An Optimal Property of Principal Components in the Context of Restricted Least Squares," T.B. Fomby, R. Carter Hill and S.R. Johnson (forthcoming), Journal of the American Statistical Association, 1977.

"An Intertemporal Comparison of Price and Income Elasticities for Food," Zuhair Hassan, Stanley R. Johnson and R.M. Finley, American Journal of Agricultural Economics, 1977, 25(2).

"Adaptive Control for Planning in Nigeria," J.S. Odama and S.R. Johnson, Journal of Economic Studies (forthcoming), 1977.

Book Review: "The Analysis of Response in Crop and Livestock Production," (2nd ed. by John L. Dillon), S.R. Johnson, Canadian Journal of Agricultural Economics, 1977.

"Alternative Estimates of Static and Dynamic Demand Systems: A Comparison Based on Canadian Data," R. Green, Zuhair Hassan and S.R. Johnson, American Journal of Agricultural Economics, February 1978.

Publications: (Monographs and Chapters in Books)

Estimating the Influence of Diversification on Farm Income Variability, High Plains of Texas, S.R. Johnson and K.R. Tiefertiller, Texas Agricultural Experiment Station, M.F. 751, December 1964.

A Multiperiod Stochastic Model of Firm Growth, S.R. Johnson, South Dakota Agricultural Experiment Station, Bulletin 541, June 1967.

"Some Useful Approaches to the Measurement of Economic Relationships Including Climatic Variables," S.R. Johnson and J.D. McQuigg, in J.A. Taylor (ed.), Climatic Resources and Economic Activity, London: David and Charles, 1974.

"A Survey of Systems Analysis and Simulation in Agricultural Economics," S.R. Johnson and Gordon C. Rauser (forthcoming), Review of Quantitative Methods in Agricultural Economics, University of Minnesota: Minnesota Press, 1976.

"Managed Capitalism: A Framework for Planned Economic Progress," S.R. Johnson and D.R. Kamerschen, in Davidson (ed.), Toward the Quality of Economic Life in Georgia, Athens: University of Georgia Press, 1976.

Consumer Demand for Major Foods in Canada, Zuhair A. Hassan and S.R. Johnson, Economics Branch, Agriculture Canada, Publication No. 76/2, April 1976.

Engel Curves for Canada: A Statistical Analysis of Structural Homogeneity, Zuhair A. Hassan and S.R. Johnson, Economics Branch, Agriculture Canada, Publication No. 75/3, July 1976.

"A Numerical Analysis of Bid Distributions in Sealed Tender Markets," E.D. Attanasi, S.R. Johnson and D.R. Kamerschen, Essays on Industrial Organization in Honor of Joe S. Bain, (ed.) R. Masson and D. Qualls, New York: Ballinger Press, 1976.

Food Consumption Patterns in Urban Canada, Zuhair A. Hassan and S.R. Johnson, Economics Branch, Agriculture Canada, Publication No. 77/1, January 1977.

Static and Dynamic Demand Functions: An Application to Canadian Data, Zuhair Hassan, S.R. Johnson and R. Green, Economics Branch, Agriculture Canada, Publication No. 77/14, November 1977.

Review of Quantitative Methods in Agricultural Economics, (ed.) R. Day, S.R. Johnson, G.G. Judge and G.C. Rausser, Minneapolis: University of Minnesota Press, 1977.

A Statistical Analysis of Consumer Demand in Canada, Zuhair A. Hassan and S.R. Johnson, Manuscript under review, 1976.

Papers Presented at Professional Meetings:

"Quality and Quantity Components of the Income Elasticity of Demand for Food," American Agricultural Economics Association Meetings, Bozeman, Montana, August 1968.

"Sources of Tax Revenues and Expenditures in Large U.S. Cities," Midwest Economics Association, Chicago, April 1969.

"Principal Components and Problems of Measuring Economic Relationships Which Include Weather Variables," American Meteorological Society, Second National Conference on Weather Modification, Santa Barbara, April 1970.

"The Phillips Curve, Expectations and Stability in the Post War U.S. Economy," Western Economics Association Meetings, Vancouver, B.C., August 1971.

"Normalization Rules, Instrumental Variables and the Proximity of the k-class Estimators," Econometric Society, New Orleans, December 1971.

"Some Issues Regarding Verification and Policy Experimentation in Sectoral Models for Agriculture in L.D.C.'s," A.I.D. Conference on Sectoral Models, Purdue University, February 1972.

"Meteorological Diversity and Electric Load Diversity: A Fresh Look at an Old Problem," American Power Conference, Chicago, March 1972.

"Structural Aspects of the Phillips Relation in the U.S. Economy," Midwest Economics Association, St. Louis, April 1972.

"Notes on Verification Problems for Systems Models," Agricultural Development Council Conference Workshop, Washington, D.C., May 1972.

"Policy Models and Research in Economic Education," U.S. Council on Economic Education Conference, Purdue University, June 1972.

"The Use of Weather Information in Planning Shell Construction," International Association for Shell Construction, Calgary, Canada, July 1972.

"A Survey of Systems and Simulation in Agricultural Economics," American Agricultural Economics Association, Gainesville, Florida, August 1972.

"Normalization Rules and the TSLs Estimator," American Statistical Association, Montreal, August 1972.

"A Dynamic Theoretic Bidding Model," American Institute of Decision Sciences, New Orleans, November 1972.

"Principal Components, Instrumental Variables and Problems of Identification," Econometrics Society, Toronto, December 1972.

"Probability Models: Construction and Weather Effects," Construction Management Section, National Highway Research Board, National Academy of Sciences, Washington, D.C., January 1973.

"Increased Precision of Weather Load Models for Long Term Planning of Large Interconnected Systems," American Power Conference, Chicago, Illinois, May 1973.

"Forecasting Variations about Base Electric Loads on the Basis of Climatic Variables," Invited paper, Third Conference on Probability and Statistics in Atmospheric Science, American Meteorological Society, Boulder, Colorado, June 1973.

"Consumer Demand for the U.S.: A Comparison of Linear Expenditures, Rotterdam and Double Log Estimates," American Agricultural Economics Association, Edmonton, Alberta, August 1973.

"Bid Distributions, Market Structure and the Behavior of Individual Firms," Western Economics Association, Claremont, California, August 1973.

"Expectations, Market Structure and Sequential Bid Pricing," Econometrica Society, Chicago, December 1973.

"Corporate Tax Shifting: A Distributed Lag Analysis," Western Economics Association, Las Vegas, Nevada, June 1974.

"Bid Distributions, Market Structure and Expectations of Individual Firms," Southern Economic Association, Atlanta, November 1974.

"Socioeconomic Determinants of Fertility in Mexico: An Analysis of Structural Change, 1950-1970," Southwest Social Science Meetings, March 1975.

"Stochastic Restrictions, Generalized Least Squares, and Biased Estimation," Kansas-Missouri Seminars in Quantitative Economics, Columbia, Missouri, May 1975.

"Leasing Policies for Extractive Resources," Western Economic Association Meeting, San Diego, June 1975.

"An Estimating Method for Models with Stochastic, Time Varying Parameters," American Statistical Association Meetings, Atlanta, August 1975.

"A Numerical Analysis of Experimental Bid Distributions in Sealed Tender Markets," American Statistical Association Meetings, Atlanta, August 1975.

"Implications of Interfirm Relationships and Characteristics of Bid Distributions," Joint National Meeting, Operations Research Society of America and the Institute of Management Sciences, Las Vegas, November 1975.

"Simulation and Systems Analysis: Applications in Agriculture," Joint National Meeting, Operations Research Society of America and the Institute of Management Sciences, Las Vegas, November 1975.

"The Newest Macroeconomics: The Good, Bad and Ugly," Southern Economic Association, New Orleans, November 1975.

"Statutory Usury Laws and Nonprice Credit Terms: An Analysis of Model With Stochastically Varying Parameters," Econometrics Society, Dallas, 1975.

"Socioeconomic Determinants of Fertility in Mexico: An Analysis of Change in Structural Relationships, 1950-1970," Population Association of America, Montreal, May 1976.

"Tests for Alternative Lag Lengths in an Almon Polynomial," Western Economics Association, June 1976.

"Urban Spatial Structure: An Analysis With a Varying Coefficient Model," American Statistical Association, August 1976.

"Discussion of Three Papers on Agricultural Sectoral Models," American Economic Association, Atlantic City, September 1976.

"Risk Aversion, Technology Adoption and Low Income Farmers in LDC's," Technical Assistance Bureau, A.I.D., December 1976.

"Price Elasticity Estimates From Cross Section and Panel Data: A Survey," Southern Regional Research Conference, Atlanta, Georgia, April 1977.

"Bids, Bid Distributions and Market Analysis: An Integrated Analysis," Operations Research Society of America and the Institute of Management Sciences, Joint Meeting, San Francisco, May 1977.

Research Related Activities: (Grants Obtained)

"Economic Aspects of Weather Modification". Three year-project with a co-principal investigation from Atmospheric Science. Funded by N.S.F. for the period 1966-1969, \$150,000.

"Economic Aspects of Weather Modification". (Renewal of previous grant.) Three year project with co-principal investigator from Atmospheric Science. Funded by N.S.F. for the period 1969-1972, \$150,000.

"An Adjustment Model for Stimulating Demographic and Economic Policies in Mexico". Funded by A.I.D. 1974-1975, \$35,000.

"Seminars for Manpower Planners and Labor Market Analysts". Funded by the U.S. Department of Labor, 1974, \$25,000.

"Respecification, Estimation, Maintenance and Updating Applied to the ERS/CED Forecast Support Group Cross Commodity Model of the Agricultural Sector". Economic Research Service, U.S.D.A., Cooperative Agreement, 1975-1976, \$35,000.

Research Related Activities: (Dissertations Supervised)

- "An Econometric Study of the Livestock Industry in Japan".
T.N. Fillippello, 1968.
- "Futures Trading Under Conditions of Uncertainty".
John Helmuth, 1970.
- "Estimation of Demand Parameters: An Empirical Analysis of Consumer Behavior in the United States".
Zuhair Hassan, 1971.
- "Production and Investment in the European Steel Industry".
Thomas Hall, 1971.
- "Uncertainty in Road Construction: Implications for State Highway Agencies".
Emil Attanasi, 1972.
- "Estimation of a Technical Production Function for Corn".
Fred Benson, 1972.
- "Expectation Formulations and Optimal Decisions in Cattle Feedlot Problems".
Richard Green, 1972.
- "Principal Components and Instrumental Variables".
Steven Reimer, 1972.
- "Capital Stock and Income Distribution in a Growing Economy: An Empirical Study of the United States and India".
Vaman Rao, 1973.
- "Adaptive Control Rules for Economic Planning: An Application to the Nigerian Economy".
Joseph S. Odama, 1973.
- "Development of Experimental Information in Agricultural Research".
Lalit Kumar Pati, 1974.
- "Economic Aspects of the Evaluation of Hospital Planning".
Michael Ryan, 1975.
- "Principal Components, Interpolation Polynomials, and Distributed Lags".
R. Carter Hill, 1975.
- "Prior and Design Related Information, Classical Approaches to the Problem of Multicollinearity".
Thomas E. Fomby, 1975.
- "An Analysis of Heteroskedasticity in Economic Models".
Syed Shahabuddin, 1976.
- "Optimal Storage Policies for Wheat".
Martin J. Blake, 1976.
- "Technology and Climatic Effects in Aggregate Production Functions".
Bernard J. Morzuch, 1977.

Consultant to: Bell-Canada, Montreal, Quebec, Canada, 1974-present.
Southern Bell Telephone Company, Atlanta, Georgia, 1976.
Texas Parks and Wildlife Department, Austin, Texas,
1971-1974.
Agriculture Canada, Ottawa, Ontario, Canada, 1974-present.
Department of Consumer Affairs, Jefferson City, Missouri,
1973.
National Oceanic and Atmospheric Administration, U.S.
Department of Commerce, Washington, D.C., 1975-present.
City of Columbia, Missouri, 1975.
U.S. Department of State, Agency for International Develop-
ment, Washington, D.C., 1975-present.
Canadian Transport Commission, Economic and Social Analysis
Branch, Ottawa, Ontario, Canada, 1975-present.
Arkansas Public Service Commission, 1976-present.
Attorney General, State of Illinois, 1977.

Personal
Information:

Editorships: American Journal of Agricultural Economics, 1977.

VITA

PERSONAL DATA: Name: Melvin George Blase

Marital Status: Married
Three children

EDUCATION: University of Missouri B.S. 1951-1955
University of Missouri M.S. 1955-1956
Iowa State University Ph.D. 1956-1960
Michigan State University Post Ph.D. 1971-1972

EXPERIENCE: University of Missouri-Columbia 1965-Present
Director, Center for International
Programs & Studies 1977-Present
Professor of Agricultural Economics 1973-Present
Associate Director, International
Programs & Studies 1972-1975
Associate Professor 1965-1973

MidAmerica International Agricultural
Consortium (Iowa State University,
University of Missouri-Columbia,
University of Nebraska-Lincoln,
Kansas State University.)
Acting Executive Director 1976-1977

Iowa State University 1963-1965
Assistant Professor--Stationed in Lima,
Peru as advisor to the Peruvian
Government in the Iowa State
University Technical Assistance Team

Air Force Institute of Technology 1961-1963
Assistant Professor
Graduate School of Logistics and
Engineering
Assistant to Dean 1960-1961
School of Systems and Logistics

Wittenberg University 1961-1962
Instructor
Evening School Program

Miami University of Ohio 1961-1963
Instructor
Evening School Program

U.S. Department of Agriculture 1956-1960
Research Economist
Economic Research Service--stationed
Iowa State University

(2)

PROFESSIONAL
AND LEARNED SOCIETIES: American Economics Association
American Agricultural Economics Association
Society for International Development
Southern Agricultural Economic Association
International Association of Agricultural
Economics

HONORS
RECEIVED: Membership, Gamma Sigma Delta, Honorary
Fraternity
Membership, Gamma Alpha Honorary Fraternity
Air Force Commendation Medal
Curator Scholarship--University of Missouri

CONSULTING
ACTIVITIES: Rockefeller Foundation 1977-Present
United States Dept. of
Agriculture
United States Dept. of Commerce 1975-Present
Ozark Regional Development
Commission 1975-Present
Resource Development Associates 1974-Present
United States Department of State 1970-1974
Missouri Real Estate Association 1968-1974
National Council of Churches 1967-1969
Brown and Root Overseas
Engineering Consultants 1965-1966

RELIGIOUS
ORGANIZATIONS: Member, Board of Directors of the
Missouri Council of Churches 1976-Present
Member, Board of Directors of the
Ecumenical Center, Columbia, Mo 1973-Present
Chairman 1975-1976
Member, Board of Directors
Union Church, Lima Peru 1964-1965

INTERNATIONAL
ACTIVITIES: Research and Technical assistance
in Peru, Colombia, Costa Rica,
Guatemala, Dominican Republic,
Indonesia, India, Korea, Tanzania,
Thhiopia, El Salvador, Honduras,
and Libya 1962-Present
Travel in Chile, Argentina, Uruguay,
Paraguay, Eduador, Panama, England,
France, Italy, Gernary, Ghana, Kenya, and
Greece

PUBLICATIONS:

- Blase, Melvin G., This Hungry World, Ray Vicker, Charles Scriber's Sons: New York, 1975, 270 pgs., Monthly Labor Review (to be published Sept. 1977) Book Review.
- Hooker, Waldo and Melvin G. Blase, "Corn Production by Tenure Types in Nicaragua." American Journal of Agricultural Economics, Volume 58, No. 5, December 1976, Proceedings Issue of the American Agricultural Economics Association annual meeting August 1976, pg. 1023.
- Avila, Marcelino and Melvin G. Blase, "The Schools of Thought on Small-Farm Development in the Developing Countries", American Journal of Agricultural Economics, Volume 58 No. 5, December 1976, Proceedings Issue of the American Agricultural Economics Association annual meeting August 1976, pg. 1025
- Blase, Melvin G., "Infrastructure - Development Considerations", Dimensions of World Food Problems, ed. Duncan, E.R., Ames, Iowa: Iowa State University Press, (to be published Sep. 1977)
- Blase, Melvin G., A. K. Sanghi, "An Economic Analysis of Energy Requirements of Alternative Farming Systems for Small Farmers: Some Public Policy Issues", Indian Journal of Agricultural Economics, (July-Sep. 1976, Vol. XXXI, No. 8)
- Blase, Melvin G., "Goals and Strategizing", Institution Building: A Reader, edited by Amy G. Mann, published by International Development Research Center, Indiana University, Bloomington, Indiana, Nov. 1975. Chapter.
- Blase, Melvin G., "Technological Obsolescence," David Hamilton, Technology, Man and the Environment, published in Growth and Change, 6 (no. 1), 1975 pg. 58. book review.
- Staub, William J. and Melvin G. Blase, "Induced Technological Change in Developing Agricultures: Implications for Income Distribution and Agricultural Development", Journal of Developing Areas, 8 (July 1974), 581-596.
- Stauffer, Elam K. and Melvin G. Blase, "International Disequilibria in the Development Process", Economic Development and Cultural Change, 22 (January 1974), 265-78.
- Blase, Melvin G., Institution Building: A Source Book, Beverly Hills, CA: Sage Publications, 1974, 325 pgs.
- Blase, Melvin G., Parman R. Green, and Arthur Matson, "Selected Impacts of Public Water Supply Districts on Firms, Household's and Communities," Journal of Community Development Society, Vol. 4, No. 2 (Fall 1973) pgs. 94-101.
- Blase, Melvin G., "Institution Building in India: A Study of International Collaboration in Management Education", Thomas H. Hill, W. Warren Haynes, and Howard Baumgartel Bost, Harvard University Graduate School of Business Administration, Division of Research, 1973, Sloan Management Review, Book review.

- Blase, Melvin, and Clyde Hesemann, "Toward a Better Explanation of Land Prices". Journal of the American Society of Farm Managers and Rural Appraisers, Inc., Vol. 37, No. 2 October 1973, pg. 17.
- Blase, Melvin G., and Clyde Hesemann, "Farm Land Prices: Explainable or Illogical?" Southern Journal of Agricultural Economics, (July 1973), 265-70.
- Blase, Melvin G., "Striking Similarities", Earnest Fedor, The Rape of the Peasantry: Latin America's Landholding System, and Beckford, George L., Persistent Poverty: Underdevelopment in Plantation Economies of the Third World, Monthly Labor Review, 96 (February 1973), 87-8. Book Review.
- Blase, Melvin G., Wendell Gottman and Coy G. McNabb, "Public Water Supply Districts: Evaluation of a New Institution", Land Economics, XLVIII, (August 1972), 273-6.
- Blase, Melvin G., and Arnold Paulsen, "The Agricultural Experiment Station: An Institutional Development Perspective". Agricultural Science Review, X (Second Quarter 1972), 8-11.
- Staub, William J., and Melvin G. Blase, "Disequilibria in Developing Economies: Old Problems and New Priorities", American Journal of Agricultural Economics, LIII (Dec. 1971)
- Blase, Melvin G., Arthur Matson, Parman R. Green and Coy G. McNabb, "Public Water Supply Districts: Impacts in Two Areas," Columbia, MO.: University of Missouri-Columbia Extension Division, Mp 269, 1972, 6 pgs.
- Blase, Melvin G., "Desarrollo Institucional y su Relacion on la Planificacion de Proyectos." Dessarrollo Institucional. San Salvador, El Salvador, C.A. (July 1971)
- Staub, William and Melvin G. Blase, "Asia's Green Revolution Parallels U.S. Experience". Farm Index. Washington, D.C.: U.S. Department of Agriculture, September 1971.
- Blase, Melvin G., ed. Institutions in Agricultural Development. Ames: Iowa State University Press, 1971, 247 pgs.
- Blase, Melvin G., and William J. Staub, "Real Property Taxes in the Rural-Urban Fringe." Land Economics, XLVII (May 1971), 168-74.
- Wright, Arthur L., and Melvin Blase, "A Depressed Region and Three Myths." Growth and Change, II (July 1971) 14-22.
- Staub, William J., and Melvin G. Blase, "Genetic Technology and Agricultural Development". Science, CLXXII (April 1971), 119.23.
- Blase, Melvin G., and Joseph B. Goodwin, eds, Readings In International Agricultural Economic Development. New York: MSS Educational Publishing Company, 1970.
- Goodwin, Joseph, Melvin G. Blase, and Dale Colyer. "A Development Planning Model for Technological Change in Agriculture". American Journal of Agricultural Economics, LII (February 1970), 81.

- Blase, Melvin G., and William J. Staub. "Farmland in Transition in the Rural-Urban Fringe." Business and Government Review, XI (May-June 1970), 12.
- Blase, Melvin G., "Size, Efficiency, and Organization of the Production Unit in Midwestern Agriculture in the 1980's" Emerging and Projected Trends Likely to Influence the Structure of Midwest Agriculture, 1970-1985. Edited by John R. Brake, Monograph No. 11. Iowa City: College of Law, University of Iowa, (June 1970), 1-27.
- Blase, Melvin G., "Institution Building--Its' Relationship to Project Planning." Regional Conference on Institution Building. Proceedings report of Utah International Education Consortium and United States Agency for International Development. Logan: Utah State University (August 17-21, 1970), 121.
- McNabb, Coy G. and Melvin G. Blase, "Public Water for Rural Areas and Small Towns", MP 105. Columbia: University of Missouri, Extension Division, (1969).
- Blase, Melvin G., "The World Food-Population Problem: 1969", Business and Government Review, X (May-June 1969), p. 20. To be reprinted in W. Johnson and David R. Kamerschen, ed. Readings in Economic Development. Nashville: Southwestern Company, (early 1972).
- Blase, Melvin G., Edwin D. Welliver and William J. Staub, An Investigation of the Effects of Urban Expansion of the Taxation of Real Property in West Central Missouri, Bulletin 941, 1968.
- Blase, Melvin G., "Discussion: Why Overseas Technical Assistance is Ineffective", American Journal of Agricultural Economics, L (December 1968), p. 1341.
- Blase, Melvin G., et al, An Annotated Bibliography on Economic and Social Development in Missouri: 1960-67. Research Bulletin 933, Agricultural Experiment Station. Columbia: University of Missouri (May 30, 1968).
- Blase, Melvin G., et al, A Selected Annotated Bibliography on Economic and Social Development in Missouri: 1960-67. MP 74, Columbia: University of Missouri, Extension Division (May 1968).
- Blase, Melvin G. and John F. Timmons, "Soil Erosion Control--Problems and Progress:", Journal of Soil and Water Conservation, XVI (1961), p. 157. Reprinted in Ian Burton and Robert W. Kates, ed., Readings in Resource Management and Conservation. Chicago: The University of Chicago Press, 1965.

Held, R. Burnell, Melvin G. Blase and John F. Timmons, Soil Erosion and Some Means for Its Control, Special Report No. 29 to Department of Economics and Sociology, United States Dept. of Agriculture, Ames: Iowa State University of Science and Technology, August 1962.

Blase, Melvin G. and John F. Timmons, Soil Erosion Control In Western Iowa: Progress and Problems, Research Bulletin 498 for Economic Research Service, USDA, Ames: Iowa State University.

Blase, Melvin G., "Sell Cropping Rights on Your Farm?", Iowa Farm Science, XV (August 1960), p. 5.

Blase, Melvin G., "Why Do We Let Our Soil Erode?", Iowa Farm Science, (Oct. 1962).

Blase, Melvin G., "Conservation and Agricultural Adjustment--Competitive or Complementary?", Journal of Farm Economics, Proceedings Issue (Dec. 1960).

Blase, Melvin G., "Factors in the Farm Real Estate Market", Iowa Farm Science, (Nov. 1960).

Blase, Melvin G., "Current Forces in the Land Market", Current Developments in the Farm Real Estate Market, August 1960.

UNPUBLISHED MATERIAL:

Ensminger, Douglas, Albert Hagan, Gary Krause, John Typpo, J. Wendell McKinsey, Dale Sechler, Robert Bevins, and Melvin G. Blase, 1974. An Analysis of the Tanzanian Food-Crops Subsector. Report prepared for USAID/Washington, D.C.

RESUME
GUSTAVO JOSÉ ARCIA

200 Mumford Hall
University of Missouri
Columbia, Missouri 65211
(314) 882-7370

Personal Data

Nationality: Nicaragua.
Married, one child. Wife has Masters degree in Child and Family Development.

Education

Institution	Dates Attended	Degree
University of Missouri-Columbia	1976-Jan. '79	Ph.D.
University of Florida	1974-75	M.S.
University of Florida	1972-74	B.S.
Escuela Agricola Panamericana	1969-71	Agronomo

Emphasis areas: Econometrics, Labor Theory, Risk and Uncertainty, Production Economics.

Languages: Spanish: Native language.
English: Read, write and speak fluently.
Portuguese: Read and speak fluently, write fair.

Experience

1976-present: Graduate Research Assistant, Department of Agricultural Economics, University of Missouri. Working on research on risk and uncertainty.

1974-75: Graduate Research Assistant, Department of Agricultural Economics, University of Florida. Research included problems of labor supply, job search, unemployment insurance, and income maintenance programs for the poor.

1973-74: Student Assistant, International Programs, University of Florida.

1972-73: Student Assistant, Department of Agricultural Engineering, University of Florida. Assisted in research on mechanical control of water hyacinth.

1969-71: Experience in agricultural practices through learn-by-doing vocational training.

United States International Development Cooperation Agency

~~DEPARTMENT OF STATE~~

AGENCY FOR INTERNATIONAL DEVELOPMENT

WASHINGTON, D.C. 20523

07 FEB 1980

Mr. H. Kent Shelton
Assistant Vice President
and Comptroller
The Curator of the University
of Missouri
Columbia, Missouri 65211

Subject: Grant AID/DSAN-G-0086
Amendment No: 2

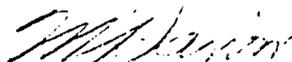
Dear Mr. Shelton:

Pursuant to the authority contained in the Foreign Assistance Act of 1961, as amended, the Agency for International Development hereby amends the subject Grant as follows:

1. Cover letter, paragraph 2, delete date "January 31, 1980 and insert in lieu thereof "4-30-80."
2. Attachment 1, Article D. Budget delete date "1-31-80" and insert in lieu thereof "4-30-80."

Please sign and return the original and six (6) copies of this letter to acknowledge your acceptance of the conditions of this amendment.

Sincerely yours,



Morton Darvin
Grant Officer
Agriculture/Nutrition Branch
Central Operations Division
Office of Contract Management

ACCEPTED:

The Curators of the University of Missouri

BY: H. Kent Shelton

H. Kent Shelton

TITLE: Assistant Vice President

Financial Services

DATE: 2/11/80