

PDBB 670

Amendment

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT DATA SHEET		1. TRANSACTION CODE <input checked="" type="checkbox"/> C A = Add C = Change D = Delete	Amendment Number 1	DOCUMENT CODE 3
2. COUNTRY/ENTITY SWAZILAND		3. PROJECT NUMBER 645-0212		
4. BUREAU/OFFICE AFR		5. PROJECT TITLE (maximum 40 characters) Cropping Systems Research and Extension Training		
6. PROJECT ASSISTANCE COMPLETION DATE (FACD) MM DD YY 08 20 91		7. ESTIMATED DATE OF OBLIGATION (Under "B" below, enter 1, 2, 3, or 4) A. Initial FY 81 4 B. Quarter 4 C. Final FY 81 9		

8. COSTS (\$000 OR EQUIVALENT \$1 =)

A. FUNDING SOURCE	FIRST FY 81			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total	3130	276	3406	12,387	513	12,900
(Grant)	(3130)	(276)	(3406)	(12,387)	(513)	(12,900)
(Loan)	()	()	()	()	()	()
Other U.S.						
1. US Peace Corps	0	0	0	29	26	55
2.						
Host Country	0	1223	1223	0	4295	4295
Other Donor(s)						
TOTALS	3130	1499	4629	12,416	4834	17,250

9. SCHEDULE OF AID FUNDING (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) FN	140	080		11,382		192		11,574	
(2) DFA	140	080				1326		1,326	
(3)									
(4)									
TOTALS						1518		12,900	

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each) 030

11. SECONDARY PURPOSE CODES (maximum 2 codes of 3 positions each) 180

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code	R/AG	BS				
B. Amount	8500	12,900				

13. PROJECT PURPOSE (maximum 480 characters)

To improve and expand the capacity of the MOAC research and extension systems program to develop and effectively extend cropping systems recommendations relevant to the economic needs of the Swazi Nation Land farmer.

14. SCHEDULED EVALUATIONS

Interim	MM YY	MM YY	Final	MM YY
	07 84	05 87		07 91

15. SOURCE/ORIGIN OF GOODS AND SERVICES

000 941 Local Other (Specify) 935

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a 42 page PP Amendment)

This amendment extends the project activity completion date by 35 months to allow the project to meet its objectives in improving the linkages between research, agricultural information and extension and provides reprogrammed assistance closely targetted to improve the extension service

17. APPROVED BY	Signature Roger D. Carlson <i>Roger D. Carlson</i>	18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION MM DD YY 11 12 88
	Title Director, USAID/Swaziland	

CROPPING SYSTEMS RESEARCH AND EXTENSION TRAINING PROJECT
645-0212

PROJECT PAPER AMENDMENT

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PROJECT PAPER AMENDMENT:
CROPPING SYSTEMS RESEARCH AND EXTENSION TRAINING
(645-0212)

I. Summary and Purpose:

The purpose of this amendment to the Cropping Systems Research and Extension Training (CSRET) Project (645-0212) is to ensure achievement of the Project End-of-Project-Status Indicators by addressing the recommendations of the second external evaluation and of the RIG/A/Nairobi subject audit. The amendment extends the Project Assistance Completion Date (PACD) by 35 months, from September 30, 1988 to August 20, 1991, and respecifies the technical inputs in order: 1) to ensure that Swazis are prepared to assume full leadership for research and extension programs initiated by long-term technical assistance, and 2) to enhance the effectiveness of the agricultural extension program by firmly establishing in-service training programs, by expanding the capacity of the Information Section to disseminate new technology, and by strengthening existing linkages between research, extension personnel and farmers.

II. Background and Experience to Date:

The goal of the CSRET Project is to increase the economic viability of farming on Swazi Nation Land (SNL).

The purpose of the project is to improve and expand the capacity of the Ministry of Agriculture and Cooperatives (MOAC) research and extension programs to develop and effectively extend cropping systems recommendations relevant to the economic needs of the SNL farmers. Both the goal and purpose objectives continue to be appropriate for this Project. Minor adjustments have been made to the output statements in the logical framework, for this Project extension, to clarify them without changing them substantively.

CSRET began in 1981 and was designed as an institution-building project aimed at redirecting MOAC's research and extension efforts to small-scale farmers. The Project originally had a PACD of September 30, 1987; however, a one-year PACD extension, to September 30, 1988, was approved in June, 1986. The Project has provided technical assistance to the MOAC in the areas of cropping systems research, agricultural information and extension training. CSRET has also supported formal degree training for MOAC personnel in research disciplines, training for field extension personnel and for agricultural information officers.

Other significant Project achievements to date include the production of sectoral baseline studies and annual updates; the design, execution, and analysis of scientific research experiments, including on-farm research; the construction and establishment of a functioning Agricultural Information Section capable of transforming research and technical information into useable form; and a survey of the land tenure system and the preparation of policy options regarding land use. CSRET has linked its farm-level research to macro policy level decisions by placing a policy advisor within MOAC and by assisting the MOAC to translate its national agricultural development strategy into sub-sector strategies and workplans.

III. Evaluation and Audit Recommendations:

An audit of CSRET was completed in March, 1988 by RIG/A (Nairobi). The audit found that while the Project had accomplished much, the benefits to small-scale farmers were limited by weaknesses in the extension system. The audit recommended that the Project identify ways to improve the extension system, and focus particularly on ways to strengthen organizational linkages between research officers and farmers, through the Agricultural Information Section and the Extension Service. The audit also recommended that effective measures of the Project's impact on the target group be developed and that these benchmarks be used to measure achievement.

In May 1987, a second mid-term evaluation of CSRET also found less progress in extension than in other areas of the Project and suggested that more support be given in the future to Extension Training with technical assistance, training, transport and funding. The evaluation team foresaw that because of the need for greater support in strengthening the Extension Service, the targets in this component of the Project might not be met by the September 30, 1988 PACD. The evaluation concluded, too, that there would be a shortage of trained Swazis to carry on the Project's activities after September 30, 1988 and that additional training should be provided. It was also recommended that certain long-term TA positions be extended to assure that Swazis could become prepared to sustain Project functions after CSRET ends.

Following the 1987 Evaluation, USAID/Swaziland planned to address the clearly identified needs for continued support for both research and extension by programming such support as a component of the Commercial Agriculture Production and Marketing (CAPM) project (645-0229), which was in a conceptual stage at that point. It was planned then that the CSRET Project would be completed in September, 1988. However, as the development of the CAPM Project proceeded, it became clear that CAPM was focusing on different development issues, and that it was more appropriate to extend CSRET to accomplish project objectives. In July 1987, Mission management decided to extend CSRET to respond to the evaluation recommendations, and to concentrate CAPM exclusively on the new objective of increasing small farmer commercial agricultural production.

IV. Extension of the CSRET Project:

A. Rationale for Project Extension:

USAID reviewed the evaluation and audit recommendations and confirmed that additional time and resources would be required to: 1) consolidate achievements realized to date by ensuring that Swazis are prepared to assume full leadership for the expanded research and extension programs which have been initiated with long-term technical assistance, and 2) enhance the effectiveness of agricultural extension programs by firmly establishing regularly scheduled in-service training programs, expanding the capacity of the Information Section to prepare and disseminate new technology and strengthening existing linkages between research, extension personnel, and farmers.

In consultation with the MOAC, representatives of Pennsylvania State University (PSU) and Tennessee State University (TSU), USAID specified the technical inputs required to achieve the EOPS indicated in the Project Paper Logical Framework, in light of evaluation and audit recommendations. This respecification, indicated in revised Logical Framework inputs, reflects achievements already realized in research, but also the tentative nature of these, and the requirement of additional support to consolidate the gains made and to prepare the Swazi scientists to assume full responsibilities for a national research program.

The Project extension places increased emphasis on strengthening technical extension services to farmers. Instead of the single extension advisor initially specified in the Project Paper, there will be three long-term TA personnel to support the Extension Service, as described below. Recognition of the need to program additional resources in support of extension services, and especially to strengthen its linkages with research and information, was confirmed by both GOS research and extension personnel at the recent Farming Systems Research workshop sponsored jointly by CIMMYT and CSRET.

This Project amendment represents a shift in inputs to achieve the original Project objectives. Decreased emphasis is placed on the long-term TA positions in research, while added emphasis is given to short-term TA. The intent is less to initiate or execute research programs, and more to support Swazi scientists who have returned and assumed research programs initiated by TA personnel or are in the process of developing programs of their own.

The amendment extends the life of the Project to ten years. The Mission believes that this additional time, together with a refocusing of the resources already authorized for the Project, will allow consolidation of gains so far and ensure the sustainability of the agricultural research, information and extension services developed by CSRET.

Activities described below will be undertaken during the Project extension:

B. Research:

1. Summary of activities:

Under this amendment, there will be two long-term research TA positions: a Farming Research Systems Methodologist (a new two-year, nine-month position), and a Production Economist (a two-year extension of a current position). These positions represent a decreased emphasis on long-term TA support in research in the last three years of CSRET. This shift reflects changing conditions at MOAC, where Swazi scientists who have returned from training have a greater need for technical support in their own research programs than for TA to initiate separate research activities. The amendment provides this support through a combination of short-term and long-term TA.

The CSRET extension will also ensure the sustainability of CSRET research functions by sending four long-term training participants to relevant masters degree programs.

2. Response to Audit Concern About Cotton/Tobacco Research Support:

Under a Section entitled "Other Pertinent Matters," the RIG/A Audit expressed concern about the need for research support for cotton and tobacco cultivation. The Audit suggested that "[a]ny review of the project should include an assessment of the need to support research for these crops." While cotton and tobacco are major cash crops in Swaziland, CSRET Project-supported research designed to support the production of these two crops received lower priority than other activities. A specific rationale was developed for this decision on each of the crops.

For cotton, the basic rationale for a reduced level of CSRET Project-funded research support was the fact that funds are available for research from the National Cotton Board. Expertise and training specific to cotton research at the Big Bend Station was and continues to be supported from this source of funding. Also, the CSRET Project was involved in both formal and informal training that benefitted cotton research. A long-term participant was trained through the Project to the Master's level at North Carolina State University. He is now posted at the Big Bend Research Station working as a cotton entomologist. Also, TA provided under the Project worked with researchers, extension workers and farmers on the use of the electrodyne sprayer to control pests in cotton.

Assistance in tobacco production was not deemed to be of high enough priority to compete with other needs, especially the need for assistance in the production of fruits and vegetables. One reason for this lower CSRET Project priority on tobacco was the decreasing importance attached to tobacco production by the MOAC itself.

Given these factors, it is not recommended that the CSRET Project support cotton or tobacco research with any higher priority than given to these crops in the first stage of the Project.

C. Agricultural Information:

In acknowledgement of the substantial progress made in this Project component, the amendment provides mainly for short-term technical assistance (10 person months) and commodities to support the on-going work of the Agricultural Information section. The amendment also bolsters MOAC's capacity to sustain CSRET activities by supporting training in an Agricultural Information BSc degree program for one long-term participant.

D. Extension:

Under this amendment, there is increased focus on strengthening the Extension Service to enable it better to deliver appropriate messages to farmers. The bulk of the Project's resources during this 35-month extension are targetted towards improvements in Extension. Three of the long-term TA positions, the Extension Planning and Management Specialist, the Extension Irrigation Specialist, and the Extension Training Advisor, are primarily focussed on the needs of the Extension Service. The Extension Planning and Management Specialist and the Extension Training Advisor are new positions, responsive to evaluation and audit recommendations on steps to take to strengthen the

capacity of the Extension Service in these essential areas. The Extension Irrigation Specialist represents increased assistance in this area, since earlier Project-funded irrigation specialist services were more limited to responding to the needs of the Malkerns Research Station (and damage caused by Cyclone Domoina to the Station's irrigated facilities in 1984) at that time.

Other Project inputs, such as short-term TA and commodities, are also primarily programmed to either directly support the Extension Service or to strengthen its linkage with research and agricultural information.

The amendment also provides a substantial amount of long-term participant training in extension, with one participant supported in a BSc agricultural extension education program, four in BSc. programs in agricultural extension, and an additional five sent for advanced degrees in different fields of specialization and one in extension management.

Another important activity under the Project amendment will be a joint GOS/USAID assessment of the transportation needs of the Extension Service, as described more fully in Section IV G below. Both the second mid-term evaluation and the 1988 RIG/A audit stressed the lack of mobility of field extension workers as a major constraint to the effectiveness of the Extension Service.

E. Policy:

CSRET will not expand its agricultural policy activities under this amendment, recognizing that this important area will be addressed by the new Commercial Agricultural Production and Marketing project. However, the amendment does provide for continuity between the two projects by extending the current long-term TA policy advisor position in MOAC through May, 1989, assuring that policy-related questions, particularly those concerning linkages between the research, information, and extension functions, continue to receive attention.

F. Technical Justification for Revised Inputs During Project Extension:

1. Long-Term Technical Assistance:

The technical assistance components of the extended CSRETP include both long- and short-term technical assistance. Six long-term technical personnel will be provided during the 35 month Project extension. Their positions and the justification for their inclusion in the extension are provided below. Scopes of Work for the four new positions are provided in Annex 5.

The long-term technical assistance positions are as follows:

New Positions:

Extension Planning and Management Specialist	(2 years, 9 months)
Farming Systems Research Methodologist	(2 years, 9 months)
Extension Irrigation Specialist	(2 years)

Research/Extension Training Advisor (2 years)
Current Positions Extended:
Production Economist (2 years)
Agricultural Policy Advisor (1 year, 3 months)

a. New Positions Added:

(1) Extension Planning and Management Specialist:

The 1987 Evaluation of the CSRET Project, as well as the 1988 audit, recognized that the extension component of the Project had not achieved the same level of success as other Project elements. The Evaluation specifically noted that greater investment in technical assistance to support the Extension Service beyond the PACD of the Project would be required before a more viable Extension Service could be operative. The Evaluation went on to recommend that a Senior Advisor should be made available to help the Extension Service with planning and budgeting, as well as improvements in day-to-day operations. Such technical assistance, according to the Evaluation, would enhance the competency of the Extension Service. Accordingly, an Extension Planning and Management Specialist has been added to the Project. This Specialist will help assure that the greater linkages necessary between research, information and extension are strengthened as the Extension Service is strengthened and that the Extension Service is appropriately linked with other services of the MOAC.

This specialist will work with the Senior Agricultural Officer for Extension, under the Director of Agriculture, and will assist the MOAC to conduct a needs assessment identifying extension program requirements. Based on the results of the needs assessment, the specialist will plan and develop appropriate programs and will strengthen the capacity of the MOAC Monitoring and Evaluation Unit to assess the implementation of the revised extension programs and to modify them as appropriate. The Extension Planning and Management Specialist will also function as Chief of Party for the technical assistance team during the Project extension and coordinate the in-country activities of the team to assure conformity with Project objectives. He will serve as the Project's key in-country contact for relationships with USAID and have primary reporting responsibilities.

(2) Farming Systems Research Methodologist:

The 1987 Project Evaluation noted that "even at the completion of the 18-month extension (i.e., to September, 1988) there will be serious shortfalls in leadership and technical ability for the Project to continue without USAID-supported long-term and short-term TA." Specifically, the Evaluation went on to recommend strongly that the Research component of the Project required senior-level scientific advisory services to the Malkerns Research Station, especially in planning, monitoring, implementation and evaluation of research on the station. The Evaluation recommended that a Farming Systems Research Methodologist should assist the Swazi research scientists in the design and analysis of the various experiments. Accordingly, the Project Extension provides for such a position who will work with MOAC officials in preparing, reviewing, and revising the

MOAC's 3-5 year rolling research plan. The Research Methodologist will serve as a resource person to all Swazi research scientists as they prepare their annual research programs and will aim at helping them to reduce the coefficient of variance on their trials to internationally respectable levels. The Research Methodologist will also help identify appropriate training programs for Swazi research scientists at the IARCs and to develop other relevant ties.

(3) Extension Irrigation Specialist:

The 1987 Project Evaluation noted that the earlier Project TA specialist in irrigation focussed his primary attention on the irrigation requirements at the Malkerns Research Station due to Project circumstances at the time. However, the Evaluation also noted that future horticultural crop requirements, particularly fruit trees and intensive vegetable crop production, will depend on the development of appropriate irrigated conditions. Accordingly, two years of extension irrigation advisory services are added to the Project extension. The advisor will work under the guidance and direction of the Senior Agricultural Officer for Technical Services and will collaborate with all the National Subject Matter Specialists, and especially with the Irrigation Specialist. The Extension Irrigation Specialist will assist the MOAC in identifying constraints hindering irrigated agriculture on Swazi Nation Land and design programs to overcome those constraints. Particularly important will be assessments the Advisor carries out regarding crops and irrigated techniques that are economically attractive to both small and medium scale commercial farmers. This will also be of critical interest to the proposed Commercial Agricultural Production and Marketing Project (CAPM, 645-0229).

(4) Research/Extension Training Specialist:

The 1987 Project Evaluation strongly noted the weaknesses of the CSRET Project in meeting objectives for improving extension training. The 1988 CSRET audit reported similar findings. The Evaluation also identified needs for continued improvement in the overall MOAC training focus. While the Training Section has undertaken many tasks, the Evaluation recommended that greater thought to its mission and programs be developed, particularly in the coordination of training, development of educational materials, training of trainers, and organizing and coordinating academic and short-term training programs. Therefore, the Project Extension provides for two years service of a Research/Extension Training Specialist who will be responsible to the MOAC Undersecretary for Personnel Administration and will have as his counterpart the MOAC Training Officer. Together the Specialist and the Training Officer will prepare and implement an overall training plan for personnel within MOAC which will ensure the development of a unified training program within the Ministry. Primary emphasis will be on developing and implementing training for personnel in the research and extension areas within the MOAC to help ensure a flow of relevant information from the researcher through the extension system to the ultimate user, the Swaziland farmer. While the Specialist and the Training Officer will also be addressing the overall training requirement of the MOAC, this larger effort will also strengthen extension and research areas since these functions comprise approximately 70% of the MOAC's activities and the bulk of the remainder of MOAC services (marketing, cooperatives, etc) also impact on extension and Project targets.

b. Current Positions Extended:

(1) Production Economist:

The 1987 Project Evaluation noted that the current Production Economist came on board relatively late in the Project and has a considerable backlog of data to analyze. In addition, his Swazi Counterpart, who has also been recently assigned, was due to depart for long-term training. As both the socio-economist and the Production Economist would depart at the end of the Project in September 1988, if the Project were not extended, and create a large void in the Section's capability to provide economic evaluation of both surveys and production analyses at the farm level, the Evaluation strongly recommended a two-year continuation of the long-term TA Economist position. This would assure the institutionalization of Swazi research capability to test the economic effects of researchers' technical recommendations. Therefore, an additional two years of the Production Economist's services are programmed during the Project extension.

(2) Agricultural Policy Advisor:

The Agricultural Policy Advisor was added to the Project as a result of the 1984 Project Evaluation. The 1987 Evaluation noted the considerable accomplishments of the Policy Advisor and that his services are highly regarded. The Evaluation also noted that the MOAC was anxious to retain the services of the advisor even beyond the project and the Evaluation recommended that "as long as his direct advisory relationships are intact, he should continue to be effective in his personalized advisory role and continue to be funded under the Project." The Evaluation went on to note that there are broad agricultural policy issues and strategy requirements which cut across the various GOS ministries and entities, of which the MOAC is a leading institution, but that a broad approach for improving the GOS capacity to deal with such issues should be developed. The work of the Policy Advisor under the CSRET project has helped to bring such questions into focus. The proposed CAPM Project will address the broader policy and program requirements which the policy focus of the CSRETP has helped identify. Accordingly, the Policy Advisor under the CSRET Project extension will be retained for an additional 1 1/4 years to provide continuity and a bridge of needed technical services until additional technical assistance resources to be funded under the CAPM Project are in place.

2. Short-term Technical Assistance:

In addition to the long-term TA described above, there is a requirement for 60 months of specific short-term TA, estimated to be broken down in the following areas: horticultural, 10 months; agricultural economics/computers, 6 months; agronomy, 4 months; pastures and range, 3 months; biometry, 3 months; policy, 4 months; information, 10 months; extension, 12 months; and plant protection, 8 months. The long-term TA will be responsible for developing the specific scopes of work for the short-term TA summarized above. Because of the significant amount of short-term TA during this extension, the Contractor will be required to incorporate the specific plan for the utilization of short-term TA as part of the detailed Work Plan to be developed, and approved by the GOS and USAID, before December 31, 1988.

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3. Home Office Administration and Support:

In addition to the technical personnel requirements outlined above, support requirements funded through the period of the project extension to enable the technical teams to carry out their responsibilities more effectively include: Penn State Home Office Project Manager (50% time), Penn State Administrative Assistant and Secretary (25% time, each), a subcontract coordinator and administrative assistant at Tennessee State (20% time, each), and a full-time local hire in Swaziland to function as administrative assistant for the implementing team in-country.

4. Participant Training:

CSRET training activities have two aims. The first objective is to address the findings of the 1987 evaluation that the MOAC Training Section should be strengthened, particularly in terms of planning and organizational structure, in order for a viable unit to be in place at Project end and for Extension Training to be strengthened as needed. The MOAC Training Section will be assisted through the placement there of a long-term Extension Training Specialist. This position is described above, under long-term technical assistance, and a scope of work is attached in Annex 5.

The second objective is, over the remaining life of the project, to use both short and long-term training to ensure the capacity of MOAC to assume leadership and technical responsibility for CSRET activities after the Project is completed. The 1987 evaluation noted that "there is a need for further academic training to provide back-up staffing and strength in Research, Information and Extension. In-country and in-service training is underway . . . but will also be needed in a follow-on program." The Mission has decided that the necessary training activities can be completed under this extension of CSRET and that a follow-on project in research and extension will not be required.

Training activities are detailed in Annexes 3 and 4. Twelve long-term participants will be sent out-of-country to degree programs and four others will be enrolled in in-country degree programs with a short period (3 months) of additional training out-of-country. In addition to the long-term training, the amendment provides for 18 person months of short-term training.

The largest number of these long-term participants, eleven out of the sixteen total, are in Extension. This emphasis is indicative of the high priority given, under this Project amendment, to building the institutional capacity of the Extension service.

5. Other inputs:

The Project amendment provides other support for CSRET activities during the 35-month extension. A limited amount of commodities, estimated at \$150,000,

will be procured. These commodities include computers for long-term technical assistance staff with priority given to support for Extension Services, and equipment and furnishings for the Malkerns training facility which the GOS may be constructing, supplementing its contribution to CSRET. Prior to the disbursement of funds for commodities, a detailed procurement plan will be developed by the Contractor and approved by the GOS and USAID.

In addition, \$153,000 is included in the budget for other necessary direct costs, such as supplies for the Information service, insurance, repairs, property expenses and non-capital equipment, etc.

G. Project Response to Extension Transport Problems:

Transportation problems for the Extension Service represent a serious constraint to the ability of the Service to reach the Swazi farmer. This has been recognized by the two mid-term Project Evaluations, by the RIG/A/N audit, and most certainly by the MOAC itself. It is not a problem unique to Swaziland. Extension service transportation problems are common to most developing country extension services. If the Extension Service is to become as effective as it should be, the problems must be addressed in a long-term way. It would be insufficient for USAID to fund procurement and/or operating costs for a fleet of vehicles or other means of transport for the Extension Service if this temporary solution would dissolve at the end of the CSRETP. Much of the problem is related to the way the GOS allocates vehicle procurement priorities and manages vehicle maintenance procedures through the Central Transport Authority. The MOAC has found it difficult to increase its allocation of vehicles, despite the recognized transportation needs.

Under the CSRETP extension, Penn State, USAID, and the MOAC will jointly study a wide variety of options for providing transport to Field Extension Workers (for example, the revolving loan fund for procurement of trail bikes as outlined in Appendix F of the 1987 mid-term Project Evaluation, or other transport options that might not be vehicle-based.) If it appears that a workable solution can be devised, USAID would be willing to provide project funding, on an appropriate matching basis with the GOS, to establish, for example, a small motor pool dedicated to meeting Extension Service requirements. A portion of the contingency funds and/or commodity procurement funds can be used to support this purpose.

H. Continued Economic Feasibility:

The proposed extension of the CSRET Project will not significantly affect its economic viability. By spreading the streams of benefits and costs throughout a longer time period, at the same level of Project costs, the economic viability should either remain unchanged or experience a slight improvement.

The May 1987 Project Evaluation recommended that an updated economic feasibility analysis be conducted. While such an exercise would provide valuable progress indicators, it should not be considered essential to judge the economic viability of the project.

It can be reasonably expected that the project will:

- (1) increase consumer welfare by increasing food supplies;
- (2) increase the income and employment of farm workers;
- (3) increase net income of the agricultural sector;
- (4) increase the contribution of agriculture to general development;
- (5) preserve the environment; and
- (6) expand the income and employment opportunities of rural people.

V. Evaluation Considerations:

A. Benchmark Measurements to Assess Project Impact on SNL Target Farmers:

The attainment of the Kingdom of Swaziland's goal of national self-sufficiency in food requires a major contribution in terms of production from the farm families living on the SNL. The production levels in SNL areas depend on an appropriate research base which is extended to the farmers in the SNL farming areas.

Extension programs are being delivered to SNL farmers through Training and Visitation messages, extension training sessions and other basic extension programs. In addition the project is also extending research information to the SNL areas through a series of on-farm trials. Project documents indicate that recent on-farm demonstrations supported under the CSRET Project have included on-farm trials on maize varieties, modified ox-drawn planters, basal fertilizer levels, nitrogen topdress amounts, maize herbicides, dry bean row spacing, and weed control technology. These trials, along with on-station demonstrations, have contributed directly to the level and variety of products being produced on the SNL. While it takes time to convince farmers of the relevance of these activities to their specific farming needs, it is gratifying to note that attendance at the Malkerns Research Station Field Day over the past two years has averaged more than 450 individuals. Also, attendance at RDA level on-farm demonstrations has often exceeded 50 people.

A second approach that has been used to provide information of direct relevance to the SNL farmers is the publication of a series of field support guides. As indicated by the titles (e.g., Calibrating a Knapsack Sprayer, Open-Pollinated Maize Seed Production, How to Make and Use a Cattle Weight Tape, Using the Ox Planter), these field support guides are designed to answer specific questions being asked by the SNL farmers.

These extension activities will continue and be enhanced during the final three years of the Project. As part of the Project plan to more sharply focus the efforts in extension, a series of 10 specific constraints to production have been identified for the production of maize, the staple crop of the SNL farmer. Constraints which the Project expects to be addressed (which were determined by asking a large number of farmers and front-line extension agents) include: low plant populations, late planting of maize, shortages of ploughing equipment, shortage of labor at weeding time, infestation of stalkborer, aluminium toxicity and nitrogen deficiencies. Progress in addressing each of these constraints will be evaluated annually and become one set of benchmarks for measuring progress during the final three years of the Project.

Maize remains the staple crop of the SNL farmer, but the variety in the SNL farm family diet and the earnings of the farm unit are often related to the availability of vegetables and fruits for sale. Benchmark measures for the final three years of the Project will be measures of the adoption of the fruit and vegetable varieties now being developed at the Malkerns Research Station and at regional research centers. Specific benchmarks include annual determinations of the acreage of horticultural production under irrigation, and increases in production of tomatoes, squash and various types of greens. Increases in the production of apples and peaches (from a propagation nursery established at Malkerns) and strawberries (from work now being done in glasshouses at Malkerns) on SNL farms will be additional benchmark measures during the final three years of the Project.

B. Evaluation Schedule:

A final Project evaluation is scheduled for 1991 to assess the extended Project's success in achieving its objectives. AID funding has been budgetted to finance the evaluation at \$80,000.

VI. Revised Implementation Schedule:

The Contractor and the MOAC will develop jointly a Work Plan to cover the entire 35-month period of the extension to demonstrate how the Project will be implemented and how Project resources are specifically linked to Project outputs. Included among the topics the Work Plan must amplify is the use of short-term TA, since this component represents a significant portion of Project resources. The Work Plan will be reviewed and approved by the GOS and USAID before December 31, 1988, or no more than 90 days after the arrival of the Chief of Party, whichever date is later.

The following schedule presents major illustrative implementation actions to take place during the 35 months extension, along with the responsible agent.

<u>DATE</u>	<u>ACTION</u>	<u>RESPONSIBILITY</u>
August 1988	PACD Extension	USAID/GOS
August 1988	3 Swazis leave for training in U.S.; 2 BSc, 1 MSc.	GOS/PSU
September 1988	PSU Contract Amendment	USAID/GOS/PSU
September 1988	Extension Planning Advisor arrives in Swaziland	PSU
September 1988	4 SEO's start BSc. sandwich program at UNISWA	PSU/GOS
October 1988	2 new Advisors arrive - Extension Irrigation Advisor - Farming Systems Methodologist	PSU
Dec 31, 1988	Approved three year Work Plan	PSU/GOS/USAID

Oct. Dec. 1988	Study options for Extension Transport Constraints	USAID/PSU/GOS
January 1989	2 Swazis leave for MSc. training in U.S.	GOS/PSU
August 1989	1 Swazi leave for MPA training in Extension Management	GOS/PSU
August 1989	3 Swazis leave for MSc. training	GOS/PSU
December 1989	1 student completes MSc. and returns to Swaziland	GOS/PSU
December 1989	Policy Advisor departs	PSU
August 1990	1 Swazi leaves for MPA training in the U.S.	GOS/PSU
August 1990	5 Swazis return from LT training	GOS/PSU
September 1990	2 LT Advisors leave (Irr. Adv., Research/Extension training Adv.)	PSU
May 1991	Sandwich Program students leave for 2-3 months training in the U.S. 2 BSc. students return	GOS/PSU
July 1991	End of Project Evaluation	USAID/GOS
July 1991	Swazis return from training (3 MSc. 1 MPA, 4 BSc. Sandwich Program)	GOS/PSU
July 1991	2 remaining Advisors depart	PSU
August 20, 1991	PACD	USAID/GOS

VII. Revised Budget:

A. AID Contribution:

A summary of AID and GOS contributions to CSRETP is found on Table One. Details of the revised budget are attached as Annex 3. The activities identified for the 35-month extension of the PACD (from 10/88 to 8/91) will require a total AID contribution of \$4,195,000. Of this amount, \$2,677,000 is available from currently obligated CSRET funds which will remain available at the end of the current PACD (9/30/88), and \$1,518,000 will be required in additional obligations. The total life-of-project AID funding will remain at \$12,900,000, as was originally authorized in 1981 for CSRET. AID inputs to support the activities during the extension proposed above will be short and long-term technical assistance, short and long-term training, and equipment/commodities. The USAID budget also includes funds for contingency use and for the final evaluation.

B. GOS Contribution:

Required GOS inputs during the 35-month extension will total \$1,493,000. They are summarized in Table One. These inputs will include salaries/emoluments, facilities and furnishings, equipment/commodities, international air fare for participants, and vehicle support. The total GOS contribution to the CSRET Project meets the requirement for a 25 percent host country contribution, in spite of significant exchange rate changes between the project's inception in 1981 (E1.00 = \$1.30) to 1988 when the PACD was extended by 35 months (E1.00 = \$.50)

In addition, there is a possibility that the GOS may construct two facilities related to CSRET activities during the 35-month extension. These are the construction of seven houses at the Malkerns Agricultural Research Station to accommodate seven National Subject Matter Specialists and the construction of training facilities with an appropriate overnight accommodation section, also at Malkerns. The residences will allow a closer linkage between the National Subject Matter Specialists (NSMSs) and the Extension Service and the researchers. The NSMSs are currently based at Manzini. While the distance between Malkerns and Manzini is not prohibitive to working contact between NSMSs and researchers, basing them both at Malkerns is a long-range objective of the MOAC as a means of assuring the most effective linkage between them.

The Training Facility at Malkerns would likewise enhance the CSRET Project. There is training currently taking place at Malkerns, but the facilities are limited and the MOAC plans to improve them through new construction. If the construction takes place during the lifetime of the extended CSRET Project, USAID Project funds will be used to procure required equipment and commodities for the Training Facility.

However, GOS budget constraints may not permit the plans for these two facilities to be executed during the remaining life of the CSRET Project. While construction of either of the two facilities would further the objectives of the CSRET Project, neither one is critical to the success of the Project.

VIII Conditions and Covenants:

The Grant Agreement Amendment will contain, in substance, the following conditions and covenants:

Condition Precedent: Prior to disbursement of Project funds for commodities, the Cooperating Country will provide a detailed plan identifying items to be funded, and assuring that all funds reserved in the Project for commodities are committed by August 31, 1990.

Covenants: A. Workplan. The Cooperating Country will develop, jointly with the technical assistance team financed under the Project during the 1988-1991 period, a detailed workplan, including use of short-term technical assistance, to strengthen in measurable ways the linkages between agricultural research, information and extension, with particular emphasis on strengthening the Agricultural Extension Services, which workplan will be completed within 90 days of arrival of said technical assistance team.

B. Transportation. The Cooperating Country will study, jointly with the technical assistance team financed under the Project, the transportation problems confronting the Agricultural Extension Service and will develop and examine a variety of options to resolve such problems during the Life of the Project.

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Annexes:

1. Logical Framework
2. GOS Letter Requesting CSRET Project Extension
3. AID and GOS Budget Details
4. Summary of Proposed Training
5. Scopes of Work for New Long-term Technical Assistance
6. AID/W cable approving PSU contract extension

REVISED
PROJECT DESIGN SUMMARY LOGICAL FRAMEWORK

Project Title and No: Cropping Systems Research and Extension Project 645-0212

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS*
<p><u>Goal:</u></p> <p>To increase the economic viability of farming on SNL.</p>	<p><u>Indicators:</u></p> <ol style="list-style-type: none"> 1. Percentage of SNL farms producing primarily for commercial market increases to 20% by 1992 and 30% by 1997 2. Percentages of SNL farms producing marketable surplus above subsistence needs increases to 60% by 1992 and 80% by 1997. 	<ol style="list-style-type: none"> 1. Project on-farm survey 2. Impact Evaluation 3. Swaziland census of agriculture 4. Annual survey of SNL 5. R.D.A. Monitoring and Evaluation Unit reports 	<p><u>Purpose to Goal Assumptions:</u></p> <ol style="list-style-type: none"> 1. GOS policies will continue to encourage cash cropping. 2. Production inputs continue to be available on a timely basis 3. Marketing systems can accommodate increase in commercial farm activities. 4. SNL area under irrigation continues to increase.
<p><u>Purpose:</u></p> <p>To improve and expand the capacity of the MOAC research and extension program to develop and effectively extend cropping systems recommendations relevant to the economic needs of SNL farmer.</p>	<p><u>End of Project Status:</u></p> <ol style="list-style-type: none"> 1. <u>Agricultural Research Capable of:</u> <ol style="list-style-type: none"> a) Conducting economic, social and technical research on a continuing basis. b) Conducting on-farm research trials yearly in each of the agro-ecological zones in each of the agro-ecological zones. c) Producing annual research recommendations designed to provide useful results to extension agents and farmers. 2. <u>Extension Program capable of:</u> <ol style="list-style-type: none"> a) Conducting on-farm demonstrations in each of the agro-ecological zones. b) Conducting annual field days and extension training sessions. c) Reaching 75% of the SNL farmers yearly with research recommendations d) Conducting in-service training sessions for all extension workers annually. e) Putting research recommendations into a form usable by extension workers and applicable to SNL farmers with various resource constraints. f) Conducting an effective information program to supplement direct extension contact. 	<ol style="list-style-type: none"> 1. Project records and evaluation 2. Ag census of SNL 3. Project contractor reports 4. Project on-farm survey 5. RDA monitoring and Evaluation Unit reports 	<p><u>Output to Purpose Assumptions</u></p> <ol style="list-style-type: none"> 1. Adequate financial resources will be made available to meet MOAC recurrent expenditures. 2. Participants will return and remain in staff positions for which they were trained.

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OUTPUTS:

A. RESEARCH

1. On-farm survey
2. Research experiments scientifically designed and conducted on-station and on-farms.
3. Production of an MOAC Annual Research Report.
4. Research results incorporated into Cropping Systems recommendations.
5. Researchers and staff fully prepared to carry out a national research program in the following areas; horticulture, agronomy, biometry socio-economics, pastures and plant pathology
6. Establish National Research capacity in agriculture economics.
7. Research Station Management capacity enhanced.
8. Linkages established with International Research Centers
9. At least 3 Swazis trained in research areas critical to the national research program.

INDICATORS:

1. Completed base study
2. Constraints identified, research conducted and results analyzed and reported for the primary crop programs.
3. Constraints identified and research results reported annually.
4. Cropping systems recommendations incorporated into extension messages by the Agricultural Information Section, for use by extension personnel.
5. Twelve Research Officers conducting research, analyzing data and preparing research reports. Research Officers inter-acting with other professionals in their discipline (both in Swaziland and abroad).
6. Professional staff contributing to the national research program. Research Officer has initiated research programs and is providing support services to other scientists.
7. Rolling 3 year Research Workplan in place.
A formal process of research planning established.
8. Short term training of Research Officers at International Agricultural Centers.
Continued collaborative work with CIMMYT, IITA, ILCA, ICRISAT and other relevant IARCs.
9. Research Officers in training complete their degrees.
Plan and budget for on-going staff development

MEANS:

1. PES
2. Annual Contractor reports
3. MOAC records and reports
4. Observations

INPUT TO OUTPUT ASSUMPTIONS:

1. The GOS will establish required posts
2. Qualified Swazis will be available for training.
3. Posts essential to the project will be filled by qualified Swazis

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B. EXTENSION

10. In-service Training Program expanded and implemented. Additional emphasis placed on enhancing the training capacity and management.

11. Expanded production of multi-media materials by information section for use in extension training

12. Extension Management Capacity enhanced.

13. Extension Training.

10. Scheduled in-service programs completed.
Enhancement of resource personnel's training skills.
Three year rolling plan for in-service training.
All 159 EWs receiving a minimum of two weeks appropriate technical in-service training annually.
Continued use of Print media.
Initiate MOAC capability in the areas of audio visual, radio, tapes, slides, etc.
Planning and budgeting capacity in place.
SEO/TS returned with MPA.
Plan and budget for on-going staff development.
Extension Training Coordinator returned with BSc.

C. RESEARCH AND EXTENSION LINKAGES

14. Strengthened linkages between Research, Agricultural Information, Extension and Faculty of Agriculture.

15. Linkage Training or cross-training.

16. Farm Demonstration and Field days.

17. Facilities in place.

14. UNISWA and MOAC cooperating on the development of research and extension training programs.
- Communication mechanisms between research and extension strengthened.
- Joint research extension programs planned and budgeted for.
Research officers coordinating with extension personnel on the development of recommendations.
Research officers assisting in the technical training of extension personnel.
15. Training of research and extension officers including emphasis on communication skills which will facilitate research-extension linkages.
Four SEO's returned with degrees
16. 162 on-farm demonstrations and 10 farmer field days.
17. Training facility established at MRS (GOS Input)
Housing constructed for NSMSs at MRS

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NARRATIVE SUMMARY	INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTION
<u>INPUTS</u>			
1. Technical Assistance	1. 71 person years of long term and 116PM of short term TA (\$9,415,000).	1. Contractor Reports	
2. Training	2. 77 study years of academic training and 60PM of short term and work/study training (\$1,258,000).	2. Project Evaluations	
3. Construction	3. Research Library/Conference room - Soils Lab. extension - Agricultural information section building - 1 TA staff house - 14 houses for Research Assistants teams - 10 Field Research storage sheds (\$533,000)	3. Observation	
4. Equipment/commodities	4. Research equipment, lab. equipment, agricultural information production materials, research trial commodities, office supplies, information production materials, vehicles and motorcycles for logistical support to research and extension; recorder and enumerator expenses (\$674,000)		
5. Subcontract Coordination, Secretarial and Administrative Assistance.	5. 22 person years of contract coordination, home and secretarial assistance (\$660,000).		
6. Three external evaluations	6. 2 Midterm project evaluations and final \$134,000		
7. Other	7. Workshops (\$18,000)		
8. Contingency	\$208,000		
<u>GOS</u>			
1. Salaries	\$2,336,000		
2. Vehicle maintenance, operation & replacement	\$ 346,000		
3. Research and Training facilities and office space, housing and furnishings.	\$1,070,000		
5. Travel costs for participants	\$ 211,000		
6. Commodities and supplies	\$ 332,000		

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SWAZILAND GOVERNMENT

Department of Economic Planning
and Sstatistics,
P: O. Box 602,..
MBABANE.

27th May, 1988.

Acting Director
US AID
P. O. Box 750
MBABANE

Dear Mr. Johnson,

RE: CROPPING SYSTEMS RESEARCH AND EXTENSION
TRAINING PROJECT

We have received a request from the Ministry of Agriculture and Cooperatives for a three year extension of the Cropping Systems Research and Extension Training Project. This would extend the Project Activity Completion Date to September 30, 1991.

We are in agreement with this request in principle and look forward to negotiating the requisite U.S. and Government of Swaziland inputs with you and the Ministry as soon as possible.

A handwritten signature in cursive script, appearing to read 'E. Bhembe'.

ELLIOT BHEMBE
ACTING PRINCIPAL SECRETARY

AID and GOS Budget Details

***** PENN STATE UNIVERSITY SUMMARY BUDGET *****
 Contract Extension Period: 9/25/88 - 8/20/91

Annual Inflation Rate of -> 6.0% (starting 89/90)

	(12 mos) 88/89	(12 mos) 89/90	(11 mos) 90/91	Total
<u>LONG TERM TECHNICAL ASSISTANCE (see detail budget for more information)</u>				
1) Project Manager (35 mos.), PSU Home Office (J.D. Jansma) - 50% time	69,157	73,307	71,862	214,326
2) Chief of Party (1 mo.) (G.Love, spouse)	22,163	0	0	22,163
3) Agricultural Policy Advisor (0.86 yrs.) (Fischer, spouse)	112,400	0	0	112,400
4) Production Economist (2.29 yrs) (Patrick - TSU, spouse)	111,951	118,146	48,985	279,082
5) Training Advisor (2 yrs) Assume: spouse + 0.5 dependents	97,554	97,318	17,213	212,085
6) Extension Planning and Management Spcst. & C.O.P. (2.75 yrs) Assume: spouse + 0.5 dependents	132,529	137,458	118,906	388,893
7) Farming Research Systems Methodologist (2.75 yrs) Assume: spouse + 0.5 dependents	116,077	116,952	100,858	333,887
8) Extension Irrigation Advisor (2.0 years) Assume: spouse + 0.5 dependents	97,554	97,318	17,213	212,085
9) Subcontract Coordinator (TSU Home Office) Assume: 1/5 time for 35 months	17,093	18,119	17,701	52,913
10) Administrative Assistant (TSU Home Office) Assume: 1/5 time for 35 months	6,844	7,255	7,049	21,148
11) Administrative Officer (PSU Home Office) Assume: 1/4 time for 35 months	6,844	7,255	7,049	21,148
12) Secretary (PSU Home Office) Assume: 1/4 time for 35 months	6,844	7,255	7,049	21,148
13) Travel for PSU & TSU Deans to Swaziland	10,152	10,761	11,407	32,320
TOTAL: LT TECHNICAL ASSISTANCE	807,162	691,144	425,292	1,923,598
<u>SHORT-TERM TECHNICAL ASSISTANCE (see detail budget for more information)</u>				
Short-Term Tech. Asst. (60 mos. total broken down into 20 mos./yr @ 88/89 base cost of \$14,458/mo.)	289,160	306,520	324,900	920,580

LONG-TERM PARTICIPANT TRAINING

(\$20,000/yr - M.S., \$19,000/yr - B.S.)

MPA Research Management (1yr)	20,000			20,000
MSc. Agricultural Economics (2yrs)	20,000	21,200		41,200
MSc. Agronomy (2yrs)	20,000	21,200		41,200
M.Sc. Entomology (2yrs)	20,000	21,200		41,200
MPA Extension Management (1 yr)	20,000			20,000
MSc. Maize/legumes (2yrs)	20,000	21,200		41,200
MSc. Soil Chemistry (2yrs)	20,000	21,200		41,200
M. Agr. Plant Protection (2yrs)	20,000	21,200		41,200
M Agr. Agr. Economics (2 yrs)	20,000	21,200		41,200
M. Agr. Agriculture (2yrs)	20,000	21,200		41,200
B Sc. Agr. Education (3yrs)	19,000	20,140	21,348	60,488
BSc. Extension Education (3yrs)	19,000	20,140	21,348	60,488
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Total (24 yrs)	238,000	209,880	42,696	490,576

SHORT-TERM PARTICIPANT TRAINING

(PSU used \$4,500/mo to develop estimates for 1988)

(assume training evenly spread across extension)

Short Term Training at Agr. Research Centers (18 mos.)	27,000	28,620	30,337	85,957
Sandwich program - BSc. Ag @ UniSwa 3 mos. in U.S. x 4 persons	18,000	19,080	20,225	57,305
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Total (30 mos)	45,000	47,700	50,562	143,262

IN-COUNTRY DEGREE TRAINING

Sandwich program - BSc. Ag @ UniSwa (4 Persons x 3 yrs ea. @ 2000/yr)	8,000	8,480	8,989	25,469
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OTHER DIRECT COSTS

(Supplies, Communication Services, Publications, Property Expenses, Insurance, Repairs, Printing and Copying, Non-capital equipment etc.) Averaged \$6,868/mo. in 1987; due to reduction in staff over extension period, Other Direct Costs are estimated at \$5,000/mo in 88/89 and 89/90, and \$3,000/mo in 90/91.

Other Direct costs	60,000	60,000	33,000	153,000
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COMMODITIES	75,000	75,000	0	150,000
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(includes indirect cost on purchases > \$2,500; 50% in 88/89 and 50% in 89/90)

LOCAL HIRE ADMINISTRATIVE (2.78 yrs)

(L. Van Vuuren - PSU Field Office)	28,000	29,680	24,539	82,219
(emalangenf equivalent of \$28,000/yr)				
PSU Indirect Cost - Field @ 23.05%	6,454	6,841	5,656	18,951
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	34,454	36,521	30,195	101,170

TOTAL PSU EXTENSION BUDGET	1,556,776	1,435,245	915,634	3,907,655
	*****	*****	*****	*****

***** PENN STATE UNIVERSITY BUDGET DETAIL *****
 Contract Extension Period: 9/25/88 - 8/20/91

Annual Inflation Rate of -> 6.0% (starting 89/90)

	(12 mos) 88/89	(12 mos) 89/90	(11 mos) 90/91	Total
TECHNICAL ASSISTANCE - KEY PERSONNEL				

1) Project Manager (35 mos.), PSU Home Office (J.D. Jansma) - 50% time				
Salary @ 6,200/mo. (50%)	37,200	39,432	38,315	114,947
Fringe @ 25.44%	9,464	10,032	9,747	29,243
Travel (1 RT/yr @ 3,600 ea)	3,600	3,816	4,045	11,461
Per Diem (2 weeks/yr @ \$75/day) + Travel Status @ \$200/day	1,250	1,325	1,405	3,980
Misc/Car Rental @ \$200/trip	200	212	225	637
Home Office Indirect @ 33.73%	17,443	18,490	18,125	54,058
Subtotal	69,157	73,307	71,862	214,326
2) Chief of Party (1 mo.) (G.Love, spouse)				
Salary @ 5,948/mo.	5,948			5,948
Fringe @ 25.44%	1,513			1,513
Travel (return home @ \$1800/OW)	3,600			3,600
Per Diem (Travel Status @ \$200/dy)	400			400
UAB	2,250			2,250
HHE (Settling in Allow. rec'd)	4,000			4,000
Field Indirect Cost @ 23.05%	4,152			4,152
Res. Util. & Guard Serv. @ \$300/mo	300			300
Subtotal	22,163	0	0	22,163
3) Agricultural Policy Advisor (0.86 yrs.) (Fischer, spouse)				
Salary @ 5,948/mo	61,383			61,383
Fringe @ 25.44%	15,616			15,616
Travel (return home @ \$1800/OW)	3,600			3,600
Per Diem (Travel Status @ \$200/dy)	400			400
UAB	2,250			2,250
HHE (Settling in Allow. rec'd)	5,000			5,000
Field Indirect Cost @ 23.05%	21,055			21,055
Res. Util. & Guard Serv. @ \$300/mo	3,096			3,096
Subtotal	112,400	0	0	112,400
4) Production Economist (2.29 yrs) (Patrick - TSU, spouse)				
Salary @ 5,300/mo	63,600	67,416	20,724	151,740
Fringe @ 25.44%	16,180	17,151	5,272	38,603
Travel (2 RT + rtn home @ 1800/OW)	7,200	7,632	4,045	18,877
Per Diem (Travel Status @ \$200/dy)	400	0	449	849
UAB			2,528	2,528
HHE (Settling in Allow. rec'd)			5,618	5,618
Field Indirect Cost @ 23.05%	20,971	22,131	9,176	52,278
Res. Util. & Guard Serv. @ \$300/mo	3,600	3,816	1,173	8,589
Subtotal	111,951	118,146	48,985	279,082
5) Training Advisor (2 yrs) Assume: spouse + 0.5 dependents				
Salary @ 4,000/mo.	48,000	50,880		98,880
Fringe @ 25.44%	12,211	12,944		25,155
Travel (Arrival, R&R, Return)	4,500	9,540	5,056	19,096
Per Diem (Travel Status @ \$200/dy)	450		506	956
UAB	2,500		2,809	5,309
HHE Shipment, 2400lbs	5,000		5,618	10,618
HHE Storage @ \$150/mo	1,800	1,908		3,708
Furnishings Reimbur. (M Kenyon)	1,500			1,500
Field Indirect Cost @ 23.05%	17,993	18,230	3,224	39,447
Res. Util. & Guard Serv. @ \$300/mo	3,600	3,816		7,416
Subtotal	97,554	97,318	17,213	212,085

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6) Extension Planning and Management Spcst. & C.O.P. (2.75 yrs)
(Pitts, spouse)

Salary @ 5,948/mo.	71,376	75,659	60,149	207,184
Fringe @ 25.44%	18,158	19,248	15,302	52,708
Travel (Arrival, R&R, Return)	3,600	7,632	4,045	15,277
Consultation Travel (2 RTs)		3,816	4,045	7,861
Consul. Per Diem (5 days x 2 x 80)		424	449	873
Per Diem (Travel Status @ \$200/dy)	450		506	956
UAB	2,500		2,809	5,309
HHE Shipment, 2400lbs	5,000		5,618	10,618
HHE Storage @ \$150/mo	1,800	1,908	1,517	5,225
Furnishings Reimbur. (M Kenyon)	1,500			1,500
Field Indirect Cost @ 23.05%	24,545	24,955	21,432	70,932
Res. Util. & Guard Serv. @ \$300/mo	3,600	3,816	3,034	10,450
Subtotal	132,529	137,458	118,906	388,893

7) Farming Research Systems Methodologist (2.75 yrs)
Assume: spouse + 0.5 dependents

Salary @ 5,000/mo.	60,000	63,600	50,562	174,162
Fringe @ 25.44%	15,264	16,180	12,863	44,307
Travel (Arrival, R&R, Return)	4,500	9,540	5,056	19,096
Per Diem (Travel Status @ \$200/dy)	450		506	956
UAB	2,500		2,809	5,309
HHE Shipment (no set-in allow.)	5,000		5,618	10,618
HHE Storage @ \$150/mo	1,800	1,908	1,517	5,225
Furnishings Reimbur. (M Kenyon)	1,500			1,500
Field Indirect Cost @ 23.05%	21,463	21,908	18,893	62,264
Res. Util. & Guard Serv. @ \$300/mo	3,600	3,816	3,034	10,450
Subtotal	116,077	116,952	100,858	333,887

8) Extension Irrigation Advisor (2.0 years)
Assume: spouse + 0.5 dependents

Salary @ 4,000/mo.	48,000	50,880		98,880
Fringe @ 25.44%	12,211	12,944		25,155
Travel (Arrival, R&R, Return)	4,500	9,540	5,056	19,096
Per Diem (Travel Status @ \$200/dy)	450		506	956
UAB	2,500		2,809	5,309
HHE Shipment (no set-in allow.)	5,000		5,618	10,618
HHE Storage @ \$150/mo	1,800	1,908		3,708
Furnishings Reimbur. (M Kenyon)	1,500			1,500
Field Indirect Cost @ 23.05%	17,993	18,230	3,224	39,447
Res. Util. & Guard Serv. @ \$300/mo	3,600	3,816		7,416
Subtotal	97,554	97,318	17,213	212,085
TOTALS - Key Personnel	710,300	588,469	359,043	1,657,812

----- TECHNICAL ASSISTANCE - OTHER LONG TERM PERSONNEL -----

9) Subcontract Coordinator (TSU Home Office)
Assume: 1/5 time for 35 months

Salary @ 4,000/mo. (20%)	9,600	10,176	9,888	29,664
TSU fringe est. @ 25.44%	2,442	2,589	2,516	7,547
TSU Home Off. Ovhd est. @ 33.73%	4,311	4,570	4,465	13,346
Dom. Travel to meet with PSU staff	500	530	562	562
Per Diem @ 3 days/meeting @ \$80	240	254	270	562
Subtotal	17,093	18,119	17,701	52,913

10) Administrative Assistant (TSU Home Office)
Assume: 1/5 time for 35 months

Salary @ 1,700/mo. (20%)	4,080	4,325	4,202	12,607
TSU fringe est. @ 25.44%	1,038	1,100	1,069	3,207
TSU Home Off. Ovhd est. @ 33.73%	1,726	1,830	1,778	5,334
Subtotal	6,844	7,255	7,049	21,148

11) Administrative Officer (PSU Home Office)
Assume: 1/4 time for 35 months

Salary @ 1,700/mo. (20%)	4,080	4,325	4,202	12,607
PSU fringe est. @ 25.44%	1,038	1,100	1,069	3,207
PSU Home Off. Indirect @ 33.73%	1,726	1,830	1,778	5,334
Subtotal	6,844	7,255	7,049	21,148

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12) Secretary (PSU Home Office)

Assume: 1/4 time for 35 months

Salary @ 1,700/mo. (20%)	4,080	4,325	4,202	12,607
PSU fringe est. @ 25.44%	1,038	1,100	1,069	3,207
PSU Home Off. Indirect @ 33.73%	1,726	1,830	1,778	5,334
Subtotal	6,844	7,255	7,049	21,148

13) Travel for PSU & TSU Deans to Swaziland

Airfare: PSU Dean - 1RT/yr @ 3,600	3600	3816	4045	11,461
Airfare: TSU Dean - 1RT/yr @ 3,600	3600	3816	4045	11,461
Per Diem: \$75 @ 7 dys/yr per Dean	1050	1113	1180	3,343
Field Indirect Cost @ 23.05%	1902	2016	2137	6,055
Subtotal	10152	10761	11407	32,320

TOTALS (Other LT Personnel) 47,777 50,645 50,255 148,677

TOTALS - ALL LT TECH. ASST. 807,162 691,144 425,292 1,923,598
 =====

Long Term Technical Assistance Budget does NOT include the following:
 (which the contractor is entitled to)

- Educational Travel (college attending dependents - 1RT/yr)
- Educational Allowance (secondary school fees and expenses)
- Emergency Travel
- Shipment of Privately Owned Vehicle
- Additional dependents over the 0.5 average per contractor

SAMPLE BUDGET FOR ONE MONTH OF SHORT TERM TECHNICAL ASSISTANCE

Salary	5,000	5,300	5,618
RT Airfare + Excess Bag.	4,000	4,240	4,494
Per Diem @ \$75/day	2,250	2,385	2,528
Car Rental in Swaz./Insurance/ Other Miscellaneous	500	530	562
Field Indirect Cost @ 23.05%	2708	2871	3043
Total	14,458	15,326	16,245
	per mo.	per mo.	per mo.

Average over contract extension period
 given 6% annual inflation and even spreading
 of consultancies----->

15,343 /month

3D

Notes to CSRET PP Amendment Budget

AID - 8/81 to 9/88: (8,705)

1) Technical Assistance (6,977)

This is composed of:

Penn State - LT	5,067
Penn State - ST	987
DEVRES (3 PIO/Ts)	297
Land Tenure Center	525
PSCs, Consultancies, Other TA	101

2) Training (599)

Penn State - LT participant	464
Penn State - ST participant	135

3) Construction - non PSU (533)

4) Equipment/Commodities (444)

Penn State - Commodities/Equipment
line item of 524 minus 80 for
Vehicles (vehicles detailed in PP)

5) Vehicles (80)

6) Mid-term evaluation (54)

7) Other - workshops (18)

AID - 10/88 - 8/91: (4,195)

All Penn State numbers from detailed Penn State budget of
8/9/88

1) Technical Assistance (3,098)

Penn State (& TSU) - LT	1,923
Penn State (& TSU) - ST	921
PSU - Other Direct Costs	153
PSU - Local Hire Administrative	101

2) Training (659)

Penn State - LT participant	491
Penn State - ST participant	143
In-country Degree	25

3) Equipment/Commodities - PSU	150
4) Final Evaluation	80
5) Contingency	208

Can be used to fund transport revolving fund,
PSU contract expenditures in excess of budget,
studies, workshops, etc.

GOS - 8/81 to 9/88: (2,802)

The PP budgets for the GOS contribution were calculated in 1981 at an exchange rate of E1.00 = \$1.30. Subsequent to the PP budgets' compilation, the exchange rate of the lilangeni weakened considerably vis-a-vis the dollar such that by August 1988, E1.00 was worth approximately \$0.41. To calculate the local currency portion of the GOS contribution over this period, it was necessary to take into account the difference between actual and budgeted exchange rates over the seven years. An average exchange rate of E1.00 = \$0.85 was used. This was applied by assuming the GOS level of effort in emalangi terms occurred as planned in the Project Paper and then converting the emalangi-based portion (i.e. excluding participant air fares) to dollars at 65% (\$0.85/\$1.30) of the originally budgeted exchange rate.

GOS - 10/88 to 8/91: (1,493)

GOS costs in emalangi are attached as an annex to the Project paper. For the purposes of the project paper amendment revised budget, these emalangi costs are converted into dollar equivalents at an exchange rate of E1.00 = \$0.50.

Given total AID LOP funding of \$12,900,000 and revised GOS LOP funding of \$4,295,000, the GOS contribution to CSRET is 25% (24.98%).

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Summary of GOS Contributions

EXPENDITURES BY FISCAL YEAR
GOS (E'000, E1 = US\$0.50)

<u>COMPONENT: RESEARCH</u>		<u>FY88</u>	<u>INFLAT-</u>	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>TOTAL</u>
<u>A. SALARIES/GRADE</u>		<u>COST</u>	<u>ION</u>				
			<u>RATE</u>				
Chief Research Officer	(1) G24	22.5	13%	25.4	28.7	32.4	86.5
Sr. Research Officers	(3) G22	17.6	13%	59.7	67.5	76.2	203.4
Research Officers	(11) G20	14.6	13%	173.8	196.9	222.2	592.9
Chief Research Recorders	(2) G16	9.1	13%	20.6	23.2	26.2	70
Sr. Research Recorders	(2) G14	7.2	13%	16.2	18.4	20.8	55.4
Research Recorders	(12) G12	5.9	13%	92.4	104.4	117.6	314.4
Laboratory Technicians	(3) G14	7.2	13%	24.3	27.6	31.2	83.1
Laboratory Assistants	(8) G11	5.4	13%	56.0	63.2	71.2	190.4
Typist	(2) G7	3.4	13%	7.6	8.6	9.8	26.0
Secretary	(3) G15	8.1	13%	27.5	31.0	35.1	83.1
							<u>1,715.7</u>
<u>B. HOUSING AND FURNISHING</u>							
* (Construction of 7 houses for NSMS Maintenance of 6 Staff (TA) houses at E1200/year/house		210.0)					*(210.0)
		7.2	13%	8.1	9.2	10.4	<u>27.7</u>
							<u>237.7</u>
<u>C. OFFICE SPACE AND RESEARCH FACILITIES</u>							
E300/Month/Office (12)		3.6	13%	4.1	4.6	5.2	13.9
* (Basic Training Facility		254.0)					*(254.0)
							<u>267.9</u>
<u>D. VEHICLE MAINTENANCE AND OPERATION</u>							
(6) at E1500/vehicle/year		9.0	13%	10.27	11.5	13.0	34.7
Fuel 1500 litres/car/year x E0.80		7.2	13%	8.41	9.2	10.4	27.7
<u>E. RESEARCH COMMODITIES AND SUPPLIES</u>							
27		27.0	13%	30.5	34.5	39.0	104.0
<u>F. PARTICIPANT TRAINING</u>							
MPA Research Management	3/trip	US 6%			3.4	3.8	7.2
MSc. Agr. Economics	3.0			3.2			6.2
MSc. Agronomy				3.2			3.2
MSc. Entomology					3.4		3.4
Horticulturalist	6.0						6.0
Sr. Research Officer Pastures	6.0	6%					6.0
Socio-economist	3.0				3.2		6.2
Biometrician	6.0						6.0
							<u>44.2</u>

* Not included in calculating
25% GOS Contribution to CSRET

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<u>EXTENSION TRAINING</u>		<u>FY88</u>	<u>INFLAT-</u>	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>TOTAL</u>
		<u>COST</u>	<u>ION</u>				
			<u>RATE</u>				
A. <u>SALARIES</u>							
Training Coord.	G20	14.0	13%	15.8	17.9	20.2	53.9
Assistant Tr. Coord.	G18	11.6	13%	13.1	14.8	16.7	44.6
NSMS (16)	G16	9.1	13%	10.3	11.6	13.1	35.0
Research Assistant (7)	G14	51.8	13%	58.5	66.1	74.7	199.3
Typist	G7	3.4	13%	3.8	4.3	4.9	13.0
							<u>345.8</u>
B. <u>HOUSING AND FURNISHING</u>							
Maintenance for 2 TA staff houses at 1200/year		2.7	13%	3.1	3.5	4.0	10.6
C. <u>OFFICE SPACE</u>							
E300/Month/Office (5)		1.5	13%	1.7	1.9	2.2	5.8
D. <u>VEHICLE MAINTENANCE AND OPERATION</u>							
1 at 1500/vehicle/year		1.5	13%	1.7	1.9	2.2	5.8
Fuel at 1500l/car/year/xE.08		1.2	13%	1.4	1.5	1.7	4.6
							<u>10.4</u>
E. <u>MATERIALS/SUPPLIES</u>							
12		12.0	13%	13.6	15.4	17.4	46.4
F. <u>PARTICIPANT AIRFARES</u>							
MPA Extension Management		3.0	US6%	3.2	3.4		6.6
BSc./Msc Agr. Extension (4)		3.0	US6%		3.4	14.2	27.6
MSc. Agronomy		3.0	US6%		3.4		6.4
MSc. Soil Chemistry		3.0	US6%		3.4		6.4
Plant Protection		3.0	US6%		3.4		6.4
Agr. Economics		3.0	US6%	3.2		3.8	7.0
MA Agr.		3.0	US6%	3.2		3.8	7.0
Bsc. Ag. Ed. (Training)		3.0	US6%			3.8	6.8
Training Coord.		3.0	US6%	6.4			6.4
<u>Others</u>							
DP.S		3.0	US6%	6.4			6.4
DVS		6.0	US6%				6.0
4 others		6.0	US6%	12.8	6.8	7.6	27.2
							<u>120.2</u>

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<u>AGRICULTURAL INFORMATION</u>		<u>FY88</u>	<u>INFLAT-</u>	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>TOTAL</u>
		<u>COST</u>	<u>ION</u>				
			<u>RATE</u>				
A. <u>SALARIES</u>							
Agricultural Officer	G20	14.0	13%	15.8	17.9	20.2	53.9
Asst. Information Off.	G16	9.1	13%	10.3	11.6	13.1	35.0
Publications Officer	G14	7.2	13%	8.1	9.2	10.4	27.7
Carpenter	G13	6.5	13%	7.3	8.3	9.4	25.0
Farm Broadcaster	G12	5.9	13%	6.7	7.5	8.5	22.7
Field Officer	G10	4.8	13%	5.4	6.1	6.9	18.4
Visual Aids Officer	G9	4.3	13%	4.9	5.5	6.2	16.6
Photographer	G9	4.3	13%	4.9	5.5	6.2	16.6
Projectionists (3)	G9	4.3	13%	14.7	16.5	18.6	49.8
Technical Asst. (3)	G8	3.9	13%	13.2	15.0	16.8	45.0
Typist	G7	3.4	13%	3.0	4.3	4.9	13.0
							<u>323.7</u>
B. <u>HOUSING AND FURNISHING</u>							
Maintenance for ITA house		1.2	13%	1.4	1.5	1.7	4.6
C. <u>OFFICE SPACE</u>							
E300/Month/Office (6)		1.8	13%	2.0	2.3	2.6	6.9
D. <u>VEHICLE MAINTENANCE & OPERATION</u>							
5 @ E1500/Vehicle/yr		7.5	13%	8.5	9.6	10.8	28.9
Fuel 1500 lt./vehicle/yrx0.80		10.6	13%	6.8	7.7	8.7	23.2
							<u>52.1</u>
E. <u>PRODUCTION MATERIALS</u>							
		20.0	13%	22.6	25.5	28.9	77.0
F. <u>PARTICIPANT AIRFARES</u>							
Bsc. Training Coordinator		3.0	US 6%			3.8	6.8
Info. Officer		6.0					6.0
							<u>12.8</u>

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PROPOSED TRAINING

<u>POSITION/SECTION</u>	<u>DISCIPLINE</u>	<u>TIME FRAME</u>			
		<u>FY88</u>	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>
A. <u>Research</u>					
Chief Research Officer	MPA Research Management			*	*
Agric-Economics Research Officer	MSc. Agric. Economics	*		*	
Agronomy Research Officer	MSc. Agronomy		*		
Antomc'ogy Research Officer	MSc. Entomology			*	
B. <u>Extension</u>					
Senior Agricultural Officer/ Technical Services	MPA Extension Management		*	*	
Senior Extension Officers (4)	4 BSc. Agric. Ext. (Sandw. Prgm.)		*	*	*
Agronomy Nation Subject Matter Specialist (SMS)(Maize/Legumes)	MSc. Agronomy	*		*	
Soils Agronomy National SMS	MSc. Soil Chemistry	*		*	
Plant Protection SMS	M. Agric. Plant Protection		*		*
Agric-Economics SMS	M. Agric. Economics		*		*
General Agric. Specialist	MSc. Agriculture		*		*
Assistant Information Officer	BSc. Agric. Education	*			*
Extension Training Officer	BSc. Agric. Extension Education	*			*
<u>SHORT TERM TRAINING</u>					
Director of Veterinary Services Training Officer		*			
Deputy Principal Secretary		*			
Senior Agricultural Officer/ Technical Services			*		
Senior Research Officer (Pastures)		*			
Senior Research Officer (Horticulture)			*		
Agric. Information Officer					*
Research Officer Socio-Economics		*			
Research Officer (Biometry)			*		
4 Unidentified Others			*		

Summary of Proposed Training

Annex 4

*Assumes GOS will pick up appropriate international travel requirements for above training plan

W

Scopes of Work for New Long-Term Technical Assistance

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JOB DESCRIPTION

EXTENSION PLANNING AND MANAGEMENT SPECIALIST/CHIEF OF PARTY

TIME FRAME:

- 2 years, 9 months

QUALIFICATIONS:

- Msc/PhD/DEd in Agricultural Extension Education or other related areas.-
- Minimum of 10 years experience, including both extension field work and administration of extension programs.
- Special importance is attached to relevance and extent of field work.

RELATIONSHIPS:

- Specialist will work with the Senior Agricultural Officer for Extension, the Senior Agricultural Officer for Technical Services and the Agricultural Officer for Extension under the general supervision and guidance of the Director of Agriculture.
- Responsible for in-field coordination of activities of technical assistance team to insure conformity to goals and objectives agreed to in "log-frame". Serves as project's key in-country contact for relationships with USAID. Reporting responsibilities to Project Manager, including responsibility for the project's "cash operating fund".

TERMS OF REFERENCE:

- Encumbent will be responsible for:
- Assisting MOAC personnel with identifying extension program requirements (needs assessment).
 - Collaborating, planning and developing extension programs (specifying types of interventions and method of implementation, suggesting modifications to the T&V methodology to improve its relevance to Swazi conditions and resources, etc.) to address the needs identified.

- Developing and/or strengthening the Monitoring and Evaluation Unit's capacity to plan for and perform field evaluations of the extension programs developed in order to make midstream adjustments of programs necessary to ensure achievement of the goal.
- Coordinating with MOAC and technical assistance personnel to ensure relevance and sufficiency of programs to assist in reinforcing the linkages between research extension and other services to farmers
-
- Helping the Directorate of Agriculture develop a common set of goals and objectives.
- Other activities and responsibilities as may be requested by the GOS and USAID or identified by PSU as necessary to ensure successful implementation of the project.

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JOB DESCRIPTION

Research/Extension Training Specialist:

TIME FRAME:

2 years

QUALIFICATIONS:

- Master's or Doctorate degree in an agricultural science with emphasis on agricultural extension education.
- Minimum of 10 years of experience, including in-field extension work and responsibility for in-service training of extension workers.
- Overseas experience in Africa preferred.

RELATIONSHIPS:

- He will be responsible to the Undersecretary for Personnel Administration (policy-level person). His local C/P will be the MOAC Training officer.
- Work with MOAC officials and staff as appropriate to meet the objectives of the assignment.
- Coordinate activities with contract representatives to ensure coordinated contractual efforts.

TERMS OF REFERENCE:

- Working together with the local C/P, he will prepare and implement an overall training plan for personnel within the MOAC which will ensure the development of a unified training program within the Ministry. Primary emphasis will be on developing and implementing training for personnel in the research and extension areas within the MOAC to help insure a flow of relevant information from the researcher through the extension system to the ultimate user, the Swaziland farmer.
- Specific activities for which the research/extension training specialist and his C/P will be responsible for include:

- Developing and implementing a training plan for formal and informal training which results in the incorporation of cropping systems recommendations into the extension messages;
- Institutionalizing a 3-year rolling plan for formal and informal (including in-service) training which emphasize joint research/extension programs;
- Evaluating training needs to improve linkages of personnel within the research/extension areas and other units with the MOAC.
- Developing, in cooperation with Swazi colleagues, appropriate curriculum materials and identifying necessary resources and personnel (either local or from external sources) to conduct needed training; and
- Working with personnel at the Faculty of Agriculture and other in-country institutions to design and implement training programs.

JOB DESCRIPTION

EXTENSION IRRIGATION SPECIALIST

TIME FRAME:

- 2 years

QUALIFICATIONS:

- Msc/PhD in Agricultural Engineering, Agricultural Mechanization, Irrigation Agronomy or equivalent.
- Minimum of 5 years of experience in irrigated agronomy extension within a farming systems approach.
- Overseas experience in LDC's preferably in an African country, is essential.
- Special importance is attached to relevance and extent of field work.

RELATIONSHIPS:

- Specialist will work under the guidance and direction of the Senior Agricultural Officer for Technical Services and under the general supervision of the Director of Agriculture.
- The incumbent will work in close collaboration with all the National Subject Matter Specialists, but especially with the Irrigation Subject Matter Specialist who will be his primary counterpart.
- Specialist will work with designated in-country contract representative to insure coordinated technical assistance effort in this area.

TERMS OF REFERENCE:

- Specialist will be responsible for:
- Assisting the MOAC in identifying constraints hindering irrigated agriculture on Swazi National Land.
 - Assessing ways and means and designing programs to eliminate or overcome the identified constraints.
 - Assessing the economic benefits of irrigated agriculture to the Swazi farmer.

- Assessing and evaluating crops that can be grown under irrigation which will provide a fair return on capital/investment to the farmer
- Helping to identify economic methods of irrigation that can be employed by SNL farmers (including simple water saving devices and creative methods of transporting water).
- Assisting farmers in identifying ways and means of getting water for irrigation.
- Assisting in development and implementation of irrigated farm trials and demonstrations for both field workers and farmers when appropriate.
- Advising farmers on improved/alternative methods of irrigating by the different methods of irrigation including sprinkler, furrow, border, strip and drip irrigation.
- Determining if irrigation schemes are performing according to design specifications and advising the design engineer on findings.
- Assisting the Irrigation Subject Matter Specialist in preparing messages to the farmers and in designing irrigation programs.
- Apart from small scale farmers, the encumbent will also work with medium scale commercial farmers involved in irrigated agriculture.
- Liaise with other departments on issues related to the above duties which affect other departments.
- Other activities and responsibilities as may be requested by GOS and USAID or identified by PSU necessary to ensure successful implementation of the project.

JOB DESCRIPTION

FARMING SYSTEMS RESEARCH METHODOLOGIST

TIME FRAME:

3 years

QUALIFICATIONS:

- PhD in one of the crop production/protection sciences.
- Experience in areas of research methods and farming systems research.
- Overseas experience essential; African experience preferred.
- Work experience or established ties with IARCs highly valued.

RELATIONSHIPS:

- Scientist will work under the general guidance and direction of the Chief Research Officer (CRO) and as a resource (support) person to all the scientists.
- Scientist will work with designated in-country contract representative to insure coordinated technical assistance effort in this area.

TERMS OF REFERENCE:

Scientist will be responsible for:

- Working with MOAC officials in preparing, reviewing and revising the MOAC's 3 to 5 years rolling research plan.
- Within the context of that research plan, serving as a resource person to all research scientists as they prepare their annual research programs. In this role he may (1) suggest and assist in the use of viable analytical procedures (2) advise on and help design trial procedures and (3) providing advice on and assistance with analyzing results and writing up findings and recommendations.
- Supporting all research programs, through other scientists, but develop no specific program of his own.

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- Specifying TORs when highly specialized assistance is required and helping to identify appropriate personnel.
- Working with Swazi scientists by suggesting research procedures to reduce (over the 3-year period of the contract) the coefficient of variation on the trials to internationally respectable levels.
- Identifying appropriate training programs especially at the IARCs for MRS personnel.
- Supporting the CRO in strengthening ties between MRS, the other NARS, especially SADCC (through SACCAR and directly), and the IARCs with relevant programs.
- Carrying out other activities and responsibilities as may be requested by the GOS and USAID or identified by PSU as necessary to ensure successful implementation of the project.

