

A.I.D. EVALUATION SUMMARY PART I

(BEFORE FILLING OUT THIS FORM, READ THE ATTACHED INSTRUCTIONS)

IDENTIFICATION DATA

A. REPORTING A.I.D. UNIT: <u>OAR/MADAGASCAR</u> <small>(Mission or AID/W Office)</small> (ES# _____)	E. WAS EVALUATION SCHEDULED IN CURRENT FY ANNUAL EVALUATION PLAN? yes <input checked="" type="checkbox"/> slipped <input type="checkbox"/> ad hoc <input type="checkbox"/> Eval. Plan Submission Date: <u>FY 88 Q 2</u>	C. EVALUATION TIMING Interim <input checked="" type="checkbox"/> final <input type="checkbox"/> ex post <input type="checkbox"/> other <input type="checkbox"/>			
D. ACTIVITY OR ACTIVITIES EVALUATED (List the following information for project(s) or program(s) evaluated; If not applicable, list title and date of the evaluation report)					
Project #	Project/Program Title (or title & date of evaluation report)	First PROAG or equivalent (FY)	Most recent PACD (mo/yr)	Planned LOP Cost ('000)	Amount Obligated to Date ('000)
936-4111	IRRI Malagasy Rice Research	1984	8/88	3,480	3,480

ACTIONS

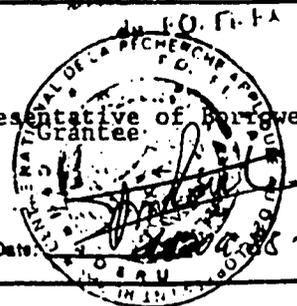
E. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR	Name of officer responsible for Action	Date Action to be Completed
Action(s) Required		
1. PACD to be extended one year and a soil scientist added to IRRI team. - Letter requesting grant agreement - Grant Agreement Amendment	IRRI USAID/REDSO Contract Officer	January 1988 March 1988
2. Outside rice breeder to assess breeding program	IRRI/FOFIFA	April 1988
3. Revolving fund with FMG 100 million advance to be established to cover local costs of project	USAID/FOFIFA/ GDRM Treasury	March 1988
4. Long-term training procedures to be formalized	IRRI/FOFIFA	May 1988
5. Support in procurement and financial planning to be improved	IRRI HQ	February 1988
6. Existing scientists to receive intensive French training	IRRI	July 1988
7. USAID not to pay IRRI staff consultants time for work in Madagascar	USAID	December 1987
8. FOFIFA Phase III plan to be accepted as basis for continuation of program and USAID to finance for another 4-5 years	USAID/IRRI	August 1989

(Attach extra sheet if necessary)

APPROVALS

F. DATE OF MISSION OR AID/W OFFICE REVIEW OF EVALUATION: mo <u>2</u> day <u>29</u> yr <u>88</u>			
G. APPROVALS OF EVALUATION SUMMARY AND ACTION DECISIONS:			
	Project/Program Officer	Mission or AID/W Office Director	Evaluation Officer
Signature	<i>D Stauffer</i>	<i>S Rea</i>	<i>D Stauffer</i>
Typed Name	DSTAUFFER	Samuel S. Rea	DSTAUFFER
Date:	<u>3/7/88</u>	Date: <u>29 APR 88</u>	Date: <u>3/7/88</u>

Representative of Borrower/Grantee



Date: _____

Dr. Charles RAZAFINDRANAKOT.

1988

H. EVALUATION ABSTRACT (do not exceed the space provided)

This clearly defined and narrowly focussed project should accomplish its most important objectives by the completion of Phase II.

* Good progress has been made in the selection for desired traits from the existing national germ plasm collection and introductions from the international germ plasm pool.

* A system has been developed and institutionalized for the exchange of information and breeding material between IRRI and FOFIFA (Department of Agricultural Research) of the Ministry of Research, Science, and Technical Development (MRSTD).

* A multidisciplinary national rice research team has been established and is working within a rice-based cropping systems context.

* The quarantine issue, which was the principal constraint during Phase I, has been resolved.

* On the negative side, long-term training has lagged far behind schedule.

* The most important constraint still to be overcome is the lack of reliable and timely local currency funding for FOFIFA's recurrent costs budget.

Recommendation:

Based on the success of the project, the strategic importance of rice in the overall Malagasy economy, and the long term nature of breeding programs, it is strongly recommended that the project be extended for another 4-5 years.

Lessons Learned:

Unrealistically quick results from a long-term rice breeding project cannot be expected.

I. EVALUATION COSTS

1. Evaluation Team Name	Affiliation	Contract Number OR TDY Person Days	Contract Cost OR TDY Cost (US\$)	Source of Funds
R. Armstrong	REDSO/ESA	14	\$ 1,200	REDSO/ESA/OE
S. Carlson	"	14	\$ 1,200	" " "
J. Flinn	IRRI	7	\$ 3,000	Project/IRRI
A. Fidelis	FOFIFA	12	FMG 75,000	GDRM/Mission
2. Mission/Office Professional Staff Person-Days (estimate) <u>3</u>		3. Borrower/Grantee Professional Staff Person-Days (estimate) <u>15</u>		

A.I.D. EVALUATION SUMMARY PART II

J. SUMMARY OF EVALUATION FINDINGS, CONCLUSIONS AND RECOMMENDATIONS (Try not to exceed the 3 pages provided)

Address the following items:

- Purpose of activity(ies) evaluated
- Purpose of evaluation and Methodology used
- Findings and conclusions (relate to questions)
- Principal recommendations
- Lessons learned

Mission or Office: OAR/MADAGASCAR

Date this summary prepared: 11/22/87

Title and Date of Full Evaluation Report: Mid-Term Evaluation - IRRI Malagasy Rice Research - Project # 936-4111

I. Introduction

The approved project purpose is to develop an institutional mechanism for the exchange of information and materials between IRRI and the GDRM rice research institution. The proposed activities are directly related to the mission strategy of improving rural incomes and nutrition through support to the agricultural sector liberalization policy with a focus on rice. The solution to the problems identified in the project have the potential of having a major impact on the agricultural sector and the economy as a whole, as Madagascar has the world's highest per capita consumption of rice and a population that is still 80% in agriculture.

II. Purpose of the Evaluation

The purpose of this evaluation is to assess progress made in: evaluating and breeding the national rice collection; introducing improved germ plasm into the country's rice breeding program; improving training and informational exchanges between IRRI and the GDRM rice research team; and developing improved cultural practices based on a rice-based cropping systems context. In addition the evaluation is to make recommendations concerning the appropriateness and extent of IRRI involvement in a future project.

The team followed the following data collection and analysis methods:

1. Interviews of IRRI and GDRM rice researchers;
2. Interviews with GDRM, FOFIFA, MPARA, and agricultural parastatal officials;
3. Interviews of potential beneficiaries;
4. Analysis of IRRI and FOFIFA quarterly reports, and other appropriate documentation submitted to the GDRM, the mission and the evaluation team;
5. Meetings with other donor and research personnel (FAO, World Bank, Caisse Centrale, European Development Fund, ISNAR, IRAT, and FAC)

III. Findings and Conclusions

The evaluation team has found the progress made by IRRI to date against stated goals and outputs to be excellent. The single exception has been in the area of long-term training. A lack of nominated candidates, a matter over which IRRI has little control, has prohibited the scheduled accomplishment of this output.

Through support to the National Rice Research team of the Department of Agricultural Research (FOFIFA) good progress continues to be made on the evaluation of entries from the national collection for specific climatic characteristics and disease resistance. Following the rehabilitation of the quarantine facilities over one thousand selected entries have been introduced and nearly 700 have been tested for specific stresses present in Madagascar. This material has been drawn from 23 countries, with less than 40% coming from IRRI, which has fewer varieties adapted to Madagascar's high elevation

SUMMARY (continued)

constraints. Based on these two sources, local and introduced material, 213 crosses have been made in 1987 to identify varieties with desired traits. Therefore it appears that the selection, breeding and agronomic testing programs are on target at this time. The constraints to improved yields, such as cold tolerance, phosphorus deficiency, iron toxicity, and disease resistance have been identified and are being addressed.

Since the last evaluation the quarantine issue has been resolved with the rehabilitation of the existing greenhouses. Following the inspection by GDRM officials of IRRI's quarantine facilities and procedures, the requirements for the introduction of F-1 crosses from IRRI have been revised, enabling a considerable saving in time required for such material to be introduced into the country and tested for release.

One of the recommendations growing out of the first evaluation was based on a concern that the project outputs, particularly the new varieties developed, were inappropriate to the needs of the project's ultimate beneficiaries. As a result of that concern a sixth output was added: rice research was to be undertaken within a rice-based cropping systems context. The evaluation team feels that this output is being addressed without the need to add a full-time farming systems specialist to the research team. Short-term training in FSR at IRRI and 6-8 week FSR consultancies in Madagascar are already promoting and institutionalizing the FSR approach. In short, the FOFIFA and IRRI researchers are fully aware of the constraints facing rice producers and are addressing those constraints in their work.

There were two major design assumptions that have been particularly difficult to overcome. The first was that the GDRM quarantine regulations would be easily amended to permit large quantities of new genetic material into the country. The concern about possible disease introduction is a major policy issue in an island society such as Madagascar's, and its significance was underestimated in the project design. As a result of three years of cooperative work involving many people and much negotiation this has finally been resolved. The second assumption regards the classic and continued problem of host government funding for the recurrent cost budgets for agricultural research. This issue is still outstanding.

IV. Lessons Learned

Some of the lessons learned can be drawn from the immediately preceding discussion and some are really lessons relearned. They include the following:

- * Long-term degree training in the U.S. for agricultural scientists is particularly difficult to achieve in former French colonies due to language barriers and institutional rewards (e.g. promotion) based on the French degree systems;
- * The introduction of breeding material for a major food crop (in this case, rice) is always difficult due to the fear of disease introduction. This problem is compounded by cultural dynamics in an island society;
- * Notwithstanding the success of the Green Revolution, results from a crop (or livestock) breeding program for a complex crop such as rice never materialize as soon as expected;
- * The introduction and/or breeding of new genetic material is only one part of the "revolution's" potential for success;

* Clearly defined, well-designed projects are often expected to produce outputs well beyond those intended at the time of design. Evaluations and expectations of a project's success should be restricted to the outputs agreed to during project design;

* The effective and timely availability of local currency even when officially allocated and earmarked from PL 480 generated funds does not guarantee effective disbursements and is identified as the single most limiting constraint to the project's achievement of outputs.

V. Summary Recommendations

1. The Phase III FOFIFA plan should be accepted as the basis for the continuation of the USAID/GDRM rice research program and that USAID recommend to the GDRM Treasury that local currency be allocated to FOFIFA as requested. xAction: USAIDx
2. The project extension and Phase III should continue in the same general direction as the project's goal, purpose and outputs are still valid and relevant: However, a full-time IRRI soil scientist should be added to the team in FY 89. xAction: IRRI and FOFIFAx
3. Given the fact that the IRRI budget is underspent by \$1.3 million the PACD should be extended until September 30, 1989 and IRRI should be requested to submit an amended budget for AID concurrence. xAction: USAID and IRRIx
4. As the first two outputs of the project are the basis of a future national breeding program, one or two outside, independent rice breeders (i.e. not related to either USAID or IRRI) should be brought in at project expense to assess the progress to date and future of the breeding program. The scope of work for this assessment should be done by FOFIFA with IRRI and USAID concurrence. xAction: FOFIFA, USAID and IRRIx
5. The GDRM local currency budget supported by regenerated US currency sources should be more flexible and responsive to the needs of FOFIFA. Given present budget levels, an annual advance in the form of a revolving fund of FMG 100 million should be established. xAction: USAID and GDRMx
6. Within six months long-term training procedures should be formalized in a manner satisfactory to all parties so that DRR and FOFIFA staff can be sent for long term training before the end of Phase II. xAction: FOFIFA and IRRIx
7. IRRI should make a concerted effort to improve the support service supplied to the Madagascar program, particularly in the areas of procurement of equipment and vehicles and accuracy of financial projections. xAction: IRRIx
8. Any additional long-term staff supplied by IRRI should be fluent in French and present staff should be receive additional intensive French training. xAction: IRRIx
9. USAID should no longer approve or pay IRRI staff consultants's time for established and core-funded positions. xAction: USAIDx

Note: See attached recommendations for specific details of these summary recommendations.

K. ATTACHMENTS (List attachments submitted with this Evaluation Summary; always attach copy of full evaluation report, even if one was submitted earlier)

Attachment 1	Evaluation Report
Appendix A	Scope of Work
Appendix B	Varieties Released and Forecast
Appendix C	List of Persons Contacted

ATTACHMENTS

L. COMMENTS BY MISSION, AID/W OFFICE AND BORROWER/GRANTEE

OAR/Madagascar commends the evaluation team for a thorough and objective job. All questions raised in the scope of work were answered. The key questions for a mid-term evaluation concerning the continued relevance of the project and progress in achieving objectives have been addressed. In addition, practical recommendations to improve performance and to ensure the achievement of project objectives have been made, many of which have already been acted upon. To a large degree, the conclusions and recommendations of the evaluation coincide with the thinking of USAID staff and that of host country counterparts involved with the IRRI rice research program.

Two factors outside the control of evaluation team members detracted from the team's work. The first was the limited amount of time available which prohibited team members from visiting regional research substations to evaluate, in particular, the progress made on integrating the farming systems approach into the research program. The second weakness of the evaluation stems from the absence on the evaluation team of a plant breeder, as had been planned. FOFIFA, the Malagasy agricultural research organization, was reluctant to approve the participation of the Malagasy scientist who had been proposed. This weakness is to be rectified through the hiring of an outside expert using project funds, to carry out an independent assessment of the breeding program being implemented under the IRRI rice research program. The conclusions and recommendations of this expert will supplement those of the evaluation team.

The one substantive comment which the Mission would like to make on the evaluation report concerns the results of the IRRI-supported breeding program. The evaluation team has presented a list of improved rice varieties which have been released by FOFIFA as evidence of positive results of the IRRI program. However, it is not apparent from the factual evidence that these varieties can be attributed directly to the IRRI project. The assessment by the outside plant breeder will be a good time to clarify this point.

MISSION COMMENTS ON FULL REPORT

XD-AX-876-A⁽¹⁾

12/22

PROJECT EVALUATION

MADAGASACAR

INTERNATIONAL RICE RESEARCH INSTITUTE (IRRI)/MALAGASY
RICE RESEARCH PROJECT

(Grant No: 936-4111-G-00-4001-00)

November 22, 1987

Antananarivo, Madagascar

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Recommendation:

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Note: See attached recommendations for specific details of these summary recommendations.

IRRI Malagasy Rice Research Project

Evaluation Report

November 22, 1987

Question 1: Is the rice research project still relevant to Madagascar's agricultural development strategy? What are the development constraints the project was initially designed to address and are they germane to the current national development strategy supported by USAID? Is the research program addressing problems of relevance to the project's beneficiaries?

The project's goal is to improve rice production of farms in Madagascar, and to increase employment, rural incomes and living standards. Given the fact that 70% of the Malagasy population is engaged in rice production and that the country was in reality bypassed by the Green Revolution, responsible for much of the improvement in food supplies in other parts of the rice-consuming world, the project is still very relevant to the country's development strategy. The overall development constraints of decreasing rural incomes, food production and nutrition which the project was designed to address are still issues germane to the current national development strategy.

The evaluation team concluded that the research program was addressing problems of relevance to the project's beneficiaries. The target outputs of the project are to develop, through selection and breeding, rice varieties which will meet the wide range of environmental, climatic and soil conditions which are present in various parts of the country. This continued research is to be institutionalized in a sustainable manner as a result of the project. The specific programs of research being developed by project-supported research scientists are those which will address the needs of the project's ultimate beneficiaries, the Malagasy rice farmers.

Question 2: Have all expenditures proceeded as planned, on schedule and within projected cost estimates? What has been the rate of expenditure over the last 12 months? Is this a factor in the timing and funding for the design of a third phase of the project?

The expenditures of funds under Phase II of the project have not proceeded as planned. Although Phase I of the project expended its funding as targeted at \$40,000 per month over 30 months, with a remaining balance of only \$50,000, Phase II has not expended funds at the anticipated increased level. With a year left in the project there is a balance of approximately \$2 million and the current rate of expenditure has continued at the Phase I level of \$40,000/month. The unexpended balance becomes a major factor in the timing and funding for the design of Phase III.

As a result of discussions with the IRRI team leader the following tentative budget was developed, based on an extension of the PACD until September 30, 1989. IRRI Headquarters will formally submit a revised budget after review with FOFIFA. The evaluation team believes the tentative budget is consistent with the project's goals and purpose, and would recommend that AID/Madagascar approve such a revised budget when it is submitted by IRRI.

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REVISED BUDGET FOR FY 1988 - FY 1989: IRRI/MALAGASY RICE
RESEARCH PROJECT

	FY 88	FY 89
Technical Assistance		
long term (1)	250,000	450,000
short term	75,000	75,000
Training		
long term (2)	150,000	150,000
short term	20,000	130,000
Commodities		
vehicles (3)	270,000	30,000
lab. equipment	220,000	80,000
Other Costs		
direct and indirect	100,000	100,000
evaluation	-	20,000
TOTAL	1,085,000	1,055,000

- (1) FY 88 - includes two long-term T.A. advisors
FY 89 - includes three long-term T.A. advisors and household effect shipment
- (2) Includes two person-years per year in a U.S. university; two person-years per year at Univ. of Philippines, Los Panos; and four person-years per year at IRRI for research
- (3) Includes vehicles previously ordered but not paid for

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Question 3: What are the project achievements in terms of the selection of pure varieties of rice within the existing national collection of germ plasm suitable for irrigated and upland conditions? Do these selected varieties improve yields, and are they more resistant to disease, cold, and insects than original varieties?

Question 4: What are the project achievements in terms of the importation testing, and multiplication of IRRI/international germ plasm adaptable to irrigated and upland conditions? Is this germ plasm designed to improve yields, shorten cultivation time, reduce losses due to cold, insects, and disease?

The national rice research collection of germ plasm is maintained at Lac Aloatra with technical assistance from IRAT. From this collection a number of entries have been selected for breeding programs based on identified high levels of cold tolerance adaptability to specific local soil conditions and resistance to disease. During the 1986 and 1987 seasons 488 entries from the collection were evaluated in variety trials and 28 entries were included as parents in crossing programs.

Five improved varieties for Lac Aloatra, five for upland rice, and four for the Middle West have been released from IRRI/FOFIFA laboratories (see Appendix B). Since the beginning of the project 1034 selected international varieties have been introduced and 683 of these have been tested for specific stress. The great majority of the testing has been done since the last evaluation. Due to the fact that a number of the entries in the so-called IRRI collection were not well-adapted for the high elevation conditions of Madagascar, material from 23 countries has been introduced, with less than 40% coming from IRRI. (See attached tables for sources of materials.)

Based on the above sources of materials, both local and introduced, the breeding program has proceeded very well. The principal target area for the crossing program is the High Plateau. During the 1987 season 213 crosses were made in an attempt to identify varieties with high, stable yields, disease resistance, and specific tolerances to cold, iron toxicity, phosphorus deficiency.

The approach to development of varieties suitable to the lower elevation and coastal areas has a completely different basis. Rather than putting the primary emphasis on crossing for specific varieties and traits, a greater emphasis is being placed on selection from imported improved varieties. During the last year a number of varieties have been tested at regional field stations and many show a very positive improvement in yield over the local test varieties. (See attached tables.)

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Question 5: Has the project developed an effective and efficient system for the exchange of information between IRRI and the GDRM rice research institution?

Question 6: How many GDRM rice research personnel have participated in in-country and out-of-country training programs? Will this training strengthen the effective operation and sustainability of the national rice research institute and its field testing locations?

In many areas the project has done well in developing an effective and efficient system for the training and exchange of information between IRRI and FOFIFA. This has occurred both within Madagascar and abroad, through international training, conferences and seminars. The major exception here is the delay of long-term training and the need to accelerate the short-term training program.

Linkages were reinforced this year with the visit to Madagascar of Dr. Swaminathan, the Director General of IRRI, for the inauguration of the National Rice Research Department at Mahitsy. During his visit Dr. Swaminathan spoke with the Prime Minister, the chief agricultural advisor to the president, the Minister of Research, Science, and Technical Development (MRSTD), the General Director of FOFIFA, as well as numerous other officials involved in rice research. In addition, Dr. Pascal, the Scientific Director of FOFIFA, visited IRRI this year, to discuss research progress and training needs. These visits markedly improved the exchange of information between IRRI and GDRM rice researchers.

Besides the two IRRI scientists working with FOFIFA full-time in Madagascar, the GDRM rice researchers have benefitted from short-term consultancies, although not to the extent projected in Phase II. 36 person-months of technical assistance were planned but to date only 15 person-months have been carried out, with another 5 person-months planned between November 1987 and August 1988. This assistance has been in the areas of training, farming systems, agronomy and economics, soil fertility, insect pests and diseases, mechanization, agroclimatology, research station improvement, statistics and computers. According to FOFIFA researchers these consultancies have been very helpful but they feel they would benefit much more from consultancies of longer duration.

As for short-term training, 9 GDRM rice researchers have been sent to IRRI for courses in genetics, farming systems, azolla and agricultural engineering, for a total of 20 person-months. This has clearly strengthened the operation and sustainability of the national rice research team and its field testing locations, but overall short-term training is far below the projected total of 80 person-months for Phase II. The evaluation team feels that the process of selecting and sending GDRM researchers for short-term training must be accelerated, with an appropriate emphasis on training in farming systems research.

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Long-term training also remains a major problem. To date no long-term training candidates have been selected or sent. There appear to be problems regarding: (1) the job security of FOFIFA researchers sent abroad for more than six months; and (2) the acceptability of American diplomas. To resolve this problem FOFIFA will ask the MRSTD to initiate a convention between the University of Madagascar and the University of the Philippines at Los Panos (UPLP) for the mutual accreditation of degrees. IRRI will support this convention and feels UPLP is an excellent graduate training institution, with constructive links to U.S. agricultural universities. Dr. Pascal has promised to recommend at least two staff researchers for long-term training before the end of the second phase.

On a more positive note, Malagasy rice researchers have attended over 21 international conferences and seminars through the IRRI project, in the Philippines, China, Indonesia, Tanzania, Pakistan, India, Senegal, Nigeria, and Bangladesh. This is more than had been planned for Phase II but the evaluation team, as well as IRRI and FOFIFA researchers, feels that this has been money well spent.

Concerning in-country training, over 35 research and field assistants have been trained by IRRI and FOFIFA rice scientists, in addition to statistics and computer training for 17 agronomists and economists.

In August of this year the Third Annual Rice Meeting of the Rice Team was held, inviting over 20 organizations involved in research, extension, training, communication and input supply. Research scientists from three departments gave presentations.

In addition, three important books on rice production and technology have been translated, two into Malagasy and one into French, for distribution at low cost. The IRRI newsletter is also received by all FOFIFA rice researchers, keeping GDRM rice researchers abreast of research developments around the world.

Perhaps most importantly, the working relationship and communication between IRRI and FOFIFA researchers appears to have improved significantly. Evidence of this is the modification of variety introductions to better reflect FOFIFA's perceived research needs. The evaluation team is pleased to note this and feels it will speed up the identification and dissemination of improved varieties, an essential component to reaching the project's goal.

(5)

Question 7: Has a country rice research strategy for the long-term development of the rice research institution been completed?

The planning for the development of the Department of Rice Research (DRR) has been completed and tentatively agreed to by the GDRM, an impressive accomplishment. It is hoped that the government will give final approval for the creation of the DRR in December 1987, with official decrees establishing its existence appearing in March 1988.

The DRR will be based at the national rice research station at Mahitsy, and will be composed of 5 major divisions: Administration and Finance; Training and Communication; Agrotechnology; Plant Improvement; and Plant Protection. It will pursue the implementation of interdisciplinary regional research teams and will strengthen its linkages to agro-socioeconomic research.

The major obstacle to the full and effective realization of the DRR is its source of funding. Part of its financing could come from regenerated local currency funds from US PL 480 sources, but a major portion must come from the national government itself. FOFIFA has proposed 2 different financial plans but it is too early to tell if one of them will be approved. Obviously, if the government does not provide funding the DRR will not become operational. PL 480 source funds might help in the interim but for long-term sustainability it is essential that the government demonstrate its commitment to the DRR.

Another matter of concern to the evaluation team regarding the DRR is the lack of clear links to the mechanisms of agricultural extension, both private and public, including the Direction de la Vulgarisation Agricole (DVA). The team feels that these links must be strengthened and defined to a greater degree. Nonetheless the conceptualization of the DRR is an important step and FOFIFA deserves credit for its work in this area.

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Question 8: Has the rice research undertaken at the rice research center and regional stations been developed within a rice-based cropping system context? What types of technologies have been developed, are the technologies suitable to a narrow or broad range of rice farmers, and do the new technologies fit into current production systems?

The evolution of rice research is clearly in the direction of the farming/cropping systems research approach. Research teams are increasingly interdisciplinary and problems being addressed are more frequently defined according to actual farmer constraints. The first fully multidisciplinary FSR diagnostic study was undertaken by FOFIFA this year in Marovoay with IRRI support. Another such study is planned for the next spring in the southwest. Several FOFIFA researchers have also been sent for 2-3 month FSR training courses at IRRI. Furthermore, in support of the farming systems program germplasm for peas, cassava, beans, maize, peanuts, sorghum, sesame, and mungbean have been introduced. Thus, while research is not entirely based on a FSR approach it is being done within within a rice-based cropping system context. The team feels that in light of severe staff and financial constraints on this kind of research IRRI and FOFIFA have made and will continue to make good progress.

The lack of adequate staff and financial resources are the primary constraints to broadening the farming systems research approach. There are simply not enough researchers to be conducting full-time on-farm research in all the major rice-growing zones. Thus the only fully operational on-farm research center is in Lac Aloatra. In addition, there are the normal difficulties in assembling scientists from different departments, each with different research priorities, into a team focusing on one issue. Two developments may help to solve these problems: the completion of the Mahitsy research station (expected next year) and the establishment of the DRR, with its projected doubling of research staff.

The lack of sufficient financial resources also severely restricts increased on-farm research. Transportation to and from field trials and the purchase of all necessary inputs and testing equipment is often prohibitively expensive. In addition, there are rarely sufficient funds to pay for casual labor required for land preparation, weeding, and harvesting. The result is that many field trials either cannot be conducted as planned or must be abandoned.

Money for on-farm testing must come from FOFIFA's central budget office. This requires making requests one month in advance and sometimes the money is not forthcoming at all. There are no quick-disbursing contingency funds. These problems in turn trace back to FOFIFA's own difficulties in obtaining disbursements of PL 480 counterpart funds from the Treasury. While the Treasury has allocated funds to FOFIFA it has been extremely slow in actually transferring this money to FOFIFA's account. Overall, researchers feel this is the biggest obstacle to implementing a farm-based research program.

(2)

With regard to the technology packages being developed it is too soon to draw any definitive conclusions as to the extent of their applicability. No technology packages have been released yet for dissemination. On the other hand, research is being done at such a range of elevations and water environments, that fully 73% of the total cultivated rice area is being covered.

Although no complete technology packages are ready, IRRI and FOFIFA have developed several specific varieties and practices suitable for extension. These include five varieties for Lac Aloatra (23% of total cultivated area) and nine varieties for the Central Highlands (42% of total cultivated area). In addition, the technique of root dipping in phosphorus, developed by the joint IRRI/FOFIFA research team, is one which could be adopted by a large number of farmers suffering from phosphorus-deficient soils. (See Appendix B)

Research into other crops used in farmers' production systems has also begun, especially potatoes and cassava. Mentioned above is a list of all the different crop germplasm introduced through this project. The goal here is to find rice varieties and complementary crops which will promote the maximum crop production within the resource capabilities of Malagasy farmers.

One comment made by a number of other rice researchers was that to increase the suitability of technology being developed more research should be undertaken on varieties requiring low inputs and limited water control. This was suggested as a way to give low resource farmers of the High Plateau greater access to improved varieties. Because the High Plateau makes up about 42% of the total rice-cultivated area in Madagascar, technologies developed for the High Plateau farmer would benefit a large percentage of the Malagasy population.. At the same time it should be pointed out that the hoped-for magic formula will be very difficult and complicated to develop, package and transfer to this beneficiary group.

The evaluation team's conclusion is that the technologies being developed will indeed be suitable to a wide range of users and will fit into current production systems with little disruption. This is likely to be increasingly the case as the integration of farming/cropping systems personnel into multidisciplinary research teams continues.

(5)

Question 9: What has been the impact so far of the rice research on rice production? Who have been the beneficiaries of this project so far? What is the expected future impact of this research?

The direct beneficiaries of project activities have been those individuals who have received training at IRRI or on-the-job in country, and those who have been able to participate in international symposia or conferences. Nine individuals have participated in training courses at IRRI during Phase II so far, with FOFIFA planning to accelerate this process next year. Over 50 FOFIFA personnel have received in-country training. In addition, 24 FOFIFA researchers have attended various international rice seminars and meetings. Next year the Ministers and Secretary Generals of MRSTD and MPARA are scheduled to visit the Philippines and Indonesia to confer with their counterparts on government rice policies.

The institution of FOFIFA is another principal beneficiary of the IRRI project, especially those elements involved in rice research. The national rice research station at Mahitsy has been constructed and equipped with IRRI and PL 480 funds, and large quantities of improved-variety rice germplasm has been introduced for FOFIFA testing. As in the evaluation of Phase I, it is important to point out the long term benefits to the institution of working with IRRI scientists in the conceptualization, planning, establishment and management of research, and the analysis and interpretation of results.

The ultimate beneficiaries of this project are and will be the rice producers of Madagascar. Farmers are already beginning to use improved varieties in the Lac Alaotra and the rainfed rice regions, although precise numbers are hard to ascertain. FOFIFA researchers have already proposed for extension 5 varieties for the High Plateau, 4 varieties for the Middle West, and 5 varieties for the Lac Alaotra region. Of these varieties, 5 are for irrigated plots and 9 are for rainfed areas. 12 varieties are expected to be released to extension agents next year, with another 8-10 varieties being released in 1989, covering all the major rice growing regions and both irrigated and rainfed rice. (See Appendix B). An examination of test results in Samongoky show increased yields of 15 to 45% (i.e. 700 to 2000 kilograms per hectare) over check varieties. At Mahitsy research station two IRRI varieties showed increased yields of 15 to 30% (830-1000 kg/ha.) over the highest yielding check variety. An increase of 500 kilograms per hectare would achieve the national goal of rice self-sufficiency.

Earlier introductions of improved varieties of rice indicate that farmers are eager for the new strains and are quick to multiply and distribute them themselves. Thus the spread effects of this research are likely to be very extensive. If we consider that roughly 70% of Madagascar's 10 million people are directly engaged in growing rice and that current rice research covers over 70% of the total cultivated area, we can predict future potential beneficiaries numbering in the millions.

(4)

Question 10: Have there been any changes in the project environment affecting the progress toward the project's development objectives? Have plant quarantine procedures been expedited? Has the GDRM provided adequate budget and staff, and access to research facilities? What external factors (e.g. national agricultural and economic policies) have influenced the project's progress?

In addition to the almost ideal weather conditions last season which enabled Malagasy farmers to harvest bumper crops of rice, about 2.4 million tons, three other changes in the project environment have affected the progress toward the project's development objectives. These are the continuing liberalization of the rice sector, the 60% devaluation in the Malagasy currency, and the creation of a retail rice reserve stock. The existence of this rice reserve stock could act as a disincentive to farmgate prices and to increased production, while the devaluation has caused rapid and extreme increases in the prices of imported inputs such as fertilizer. Prices of rice relative to the prices of other commodities are the lowest since Independence, while relative fertilizer prices are now three times more expensive. Many of the farmers who used fertilizers last year did so with the hope of making a substantial profit but these profits were not realized due to low rice prices. Consequently, farmers have expressed a reluctance to buy fertilizers and improved varieties, either because they do not believe they are cost-effective or simply do not have the purchasing power. This clearly has a negative effect on the dissemination of improved varieties from the IRRI/FOFIFA research project and is a constraint on progress toward the project's development objectives.

The third major change in the project environment has been the continuing liberalization of the rice sector. The original theory behind this was that decontrolled (and presumably higher) prices would stimulate farmers to increase production through the increased use of improved varieties, fertilizers, and other inputs. What is important here for the project is that liberalization and price changes affect farmers in different regions different ways. The exact effects of the liberalization are not yet well understood but they will surely affect the adoption by farmers of the varieties released by IRRI and FOFIFA. This deserves more analysis, perhaps at the policy reform study level.

Two factors immediately affecting the project's progress must also be noted. The first is the difficulty in maintaining an efficient and responsive funding mechanism for the PL 480 regenerated counterpart funds, crucial to the capacity of FOFIFA and IRRI to carry out their research. This problem will intensify as research increasingly moves to more expensive on-farm testing. A second problem is getting GDRM approval for the creation of more permanent established and budget-funded staff research positions within FOFIFA. Selection, breeding and on-farm testing simply cannot proceed on schedule without increases in permanent staff.

The most positive change since the last evaluation is that the quarantine issue has been resolved. Existing greenhouses have been rehabilitated and procedures for the introduction of IRRI lines and IRRI/FOFIFA crosses have been significantly expedited. The ability to release F-1 crosses after a seed pathology test and a 21-day test growth period will greatly speed up the research process. The visit of Malagasy quarantine personnel to IRRI's own quarantine facilities was an important factor in achieving this. Researchers no longer feel this is a constraint on their research. However, the dramatic increase in electricity costs (due to the devaluation) for greenhouse airconditioning may pose a problem in the future.

On a similarly positive note the national rice research station at Mahitsy is nearing completion. This will significantly enhance the efficiency and productivity of research activities. Additional vehicles and equipment which should be arriving soon will also reduce logistical bottlenecks in conducting on-farm testing.

(2)

Question 11: What should be done in the future in terms of improving the research being done and its linkage to extension systems and beneficiaries? What are the institutional mechanisms for such linkages, their strengths and weaknesses? What is the suitability of farming systems research, including on-farm testing programs? How best can rice research, seed multiplication, and extension activities be used to increase overall rice production?

The evaluation team believes that that quality of the research being done is excellent and reflects real farmer constraints. IRRI and Malagasy researchers are very knowledgeable about current rice production systems and quite familiar with the farming/cropping systems research (FSR) approach. Several regional multidisciplinary research teams are already fully operational and IRRI/FOFIFA researchers plan to extend these models to other regions soon. On-farm testing is well underway in Lac Aloatra and on the High Plateau. In addition, a major FSR diagnostic survey was completed this year in Marovoay, with another such survey scheduled for early next year in the southwest. Several FOFIFA researchers have also received FSR training at IRRI in the Philippines and are helping their colleagues orient their research around farmer-defined constraints. Therefore the evaluation team concludes that FSR is indeed appropriate to rice research in Madagascar and is in fact already being implemented.

This is not to say that there are not problems with information exchange, or that this exchange could not be enhanced. The staff and budget constraints within FOFIFA mentioned before are serious impediments to establishing complete FSR teams in all the major rice-growing areas. FOFIFA staff also need continued training in FSR, both through out-of-country training at IRRI and in-country technical assistance provided by IRRI consultants. However, the evaluation team does not feel a full-time FSR specialist needs to be added to the IRRI research team.

A much more difficult issue is forging the links between research, extension, and ultimate beneficiary. Much time was spent by the evaluation team examining this issue and, while some conclusions and recommendations can be drawn from this, more time is required to sort out the complex interactions between FOFIFA (the agricultural research department) and the DVA (the extension service). The fact that these divisions are under separate, occasionally rival, ministries compounds the problem. On the other hand, all parties concerned are well aware of the need to improve the links between research and extension and there is progress being made.

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There are numerous mechanisms for extension: the national extension service (DVA); agricultural parastatals (e.g. OMALAC); annual national rice conferences; private and public input suppliers; FOFIFA's own on-farm testing programs; the media, especially the radio; and the farmers themselves, who in some cases are formally organized in user and credit associations, and in other cases informally linked through clan and village-level relationships. An important point to make here is that Malagasy farmers are true experts themselves in terms of their production needs, and are quick to adopt and spread new technologies that are truly beneficial to them.

The DVA is currently undertaking a massive rehabilitation program with the assistance of the World Bank. It is adopting the Bank's Training and Visit (T & V) extension system and a pilot project in Antsirabe is being expanded. DVA and FOFIFA officials have met to discuss increased cooperation and, at the field level, cooperation and information exchange are already taking place in some areas. More concrete links between FOFIFA and the DVA will take more time to formalize. One important step in this direction is the training of the DVA's subject matter specialists (as part of the T & V system) by IRRI with funds from the Petits Perimetres Irrigues project. The evaluation team is pleased to note this is planned for next year and strongly supports such initiatives.

One interesting model which integrates research, extension and supply activities in the Lac Aloatra region is the Project for Research and Development (PRD). Financed by the French, the PRD organized a regional committee which coordinates all the major organizations working on rice in Lac Aloatra. The PRD also does research on farm mechanization, agrarian systems, and both irrigated and rainfed rice environments. Farmer credit and water associations have also been established, and innovative extension services are in place, including the use of radio, newspapers, and bi-monthly seminars for farmers. In short, the PRD model appears quite effective and could serve as a basis for other research/extension coordination efforts in other regions.

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Unfortunately, it is doubtful that this model can be replicated at this time. There is no evident funding source for a similar project and farmers in other areas tend to be more decentralized, less easily organized, with plot sizes too small to generate the surpluses and purchasing power necessary for production intensification. Furthermore, improved varieties are not yet available for several regions, and few areas have strong parastatals such as SOMALAC to facilitate coordination. Nonetheless, the PRD remains a very interesting model with lessons to be learned by both researchers and extension personnel. IRRI and FOFIFA staff should study this model more closely as they establish their FSR teams in other regional zones.

The evaluation team concludes that while the links between research and extension need to be increased and improved, such links cannot be forced or fabricated without taking into account the many political, economic, and cultural variables at work. The team notes that progress is being made and urges all parties involved to increase their dialogue and cooperation. As farming systems research and the DVA rehabilitation continues, and as private input suppliers increase in number, the natural links between research, extension and supply should materialize.

RECOMMENDATIONS

Note: These recommendations are in sequential response to the 11 questions that make up the Statement of Work. Please refer to Appendix A, Scope of Work, Section Four, for these questions. The responses do not reflect any prioritization.

Question 1:

A. The project extension and Phase III should continue in the same general direction as the project's goal, purpose and outputs are still valid and relevant. Following the recently signed accord between the GDRM and IRRI, the GDRM/MRSTD and AID/Madagascar are encouraged to review at the earliest possible date the unsolicited proposal which IRRI has indicated it will submit for Phase III. Early consideration will enable FOFIFA to plan for the future and improve its research.

Question 2:

A. Given the fact that the IRRI budget is underspent by \$1.3 million the PACD should be extended until September 30, 1989. IRRI should submit an amended budget for AID concurrence before March 1, 1988.

B. IRRI should make a concerted effort to improve the support service supplied to the Madagascar program. Equipment and vehicle purchases under the IRRI grant should be speeded up, minimizing logistical constraints to the on-farm testing research. The accuracy of financial projections must be improved.

C. USAID should no longer approve or pay IRRI staff consultants' time for established and core-funded positions. This is in essence double-billing as far as the US government is concerned and was not agreed to at the time of project design. Previous vouchers should be examined and such double-billed charges already paid for should be deducted from the next quarterly payment.

Questions 3 and 4:

A. As the first two outputs of the project are the basis of a future national breeding program, one or two outside, independent rice breeders (with no relation to USAID or IRRI) should be brought in at project expense to assess the progress to date and future of the breeding program. A scope of work for this activity would best be developed by FOFIFA with IRRI and USAID concurrence.

B. A full-time IRRI agronomist/soil scientist should be added to the IRRI team, to better understand and respond to actual soil constraints faced by farmers.

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Questions 5 and 6:

A. Within six months long-term training procedures should be formalized in a manner satisfactory to all parties so that DRR and FOFIFA staff can be sent for long-term training before the end of Phase II. In addition, IRRI and USAID should support the convention between the University of Madagascar and the University of the Philippines at Los Panos. USAID should emphasize that if no accord can be worked out the government risks losing an important source of funding for this vital long-term training.

B. IRRI should also be prepared to support the training of additional agricultural professionals, particularly from other ministries, including MPARA. The planned training of the extension service's subject matter specialists at IRRI is a step in this direction. In so doing the project can help forge the links between research and extension.

C. Any additional long-term staff supplied by IRRI should be fluent in French (FSI 3) and present staff should be sent to France for 1-2 months of intensive French training before the end of the extended Phase II project is completed.

Question 7:

A. In light of the progress regarding output 5, "the completion a country rice research strategy for the long-term development of a national rice research institution", the evaluation team recommends that consideration be given to dropping this output from the third phase of the project.

Questions 8 and 9:

A. Farming/Cropping System Research should primarily focus on the constraints face by low-resource, low-input farmers who make up the bulk of Madagascar's farmers. More FOFIFA personnel should be sent to IRRI for FSR training. A full-time FSR specialist does not need to be added to the IRRI rice research team at this time, although short-term training and consultancies in FSR should definitely continue.

Question 10:

A. The GDRM local currency budget, supported by regenerated PL 480 sources, should become more flexible and responsive to FOFIFA's needs. Given present budget levels an annual advance in the amount of FMG 100 million should be established for FOFIFA at the beginning of the year. A revolving subaccount for IRRI's operating expenses should also be established at this time. FOFIFA's expenses should be reimbursed on a monthly basis against this account, so as to maintain the level in the account. The account should be audited annually according the GDRM regulations.

Question 11:

A. The Director of Research at FOFIFA, Dr. Pascal Ravohitrarivo, should prepare within the next three months a plan for increased interaction between the newly established Department of Rice Research and the various mechanisms for agricultural extension, public and private.

B. As part of an upcoming assessment of the fertilizer sector attention should be paid to the role private suppliers can play in agricultural extension.

C. FOFIFA and IRRI researchers should increasingly seek out their regional extension counterparts to explore possibilities for cooperation and information exchange.

D. See recommendations concerning Questions 5/6 and 8/9 regarding farming systems research and linkages between research and extension.

Appendix B

VARIETIES RELEASED FOR EXTENSION AND FORECASTS FOR THE FUTURE

I. High Plateau -

Released in 1986/87:

- Irrigated rice: #2067, Taitung 168 (Taiwan)
- #2822, Mutant Mojomena 27/110,
(national collection)
- #473, Kalila, (national collection)
- Rainfed rice: #3406, FOFIFA 62, (national collection)
- #3290, IRAT 112, (Ivory Coast)

Forecast for Release in 1988:

- Irrigated rice: #2787, B54/6/Km/112/2/2 (Indonesia)
- #3327, Tong Kang No. 1, (China)
- #2792, Rat Va, (Indonesia)

Forecast for Release in 1989:

- Irrigated rice: 2 varieties

Forecast for Release in 1990:

- Irrigated rice: 2-3 varieties
- Rainfed rice: 2-3 varieties

II. Middle West -

Released in 1986/87:

- Rainfed rice: #3290, IRAT 112 (Ivory Coast)
- #3293, IRAT 134 (Ivory Coast)
- #3375, FOFIFA 31, (national collection)
- #3414, FOFIFA 70, (national collection)

Forecast for Release in 1988:

- Irrigated rice: #2798, Tche Kouai, (China)
- #2067, Taitung 16 B, (China)
- #2822, Mutant Roj 271/10, (national
collection)
- #2787, B54/6/Km/112/2, (Indonesia)

Forecast for Release in 1989:

- Rainfed rice: 2-3 varieties

Forecast for Release in 1990:

- Irrigated rice: 2-3 varieties

III. Lac Aloatra -

Released in 1986/87:

Irrigated rice: #2798, Tche Kouai, (China)
#2787, (Indonesia)

Rainfed rice: #3293, FOFIFA 28, (national
collection)
#3293, IRAT 134, (Ivory Coast)
#3407, FOFIFA 63, (national
collection)

Forecast for Release in 1988:

Irrigated rice: 1 doublecropping variety

Forecast for Release in 1989:

Lowland rice: 1-2 varieties

Deepwater rice: 1-2 varieties

Forecast for Release in 1990:

Irrigated rice: 2 varieties

Rainfed rice: 2 varieties

IV. Tanadava (West) -

Forecast for Release in 1988/89:

Irrigated rice: #3189, IR 36c, (IRRI)
#2798, Tche Kouai, (China)
#3184, HB 96, (IRRI)

Forecast for Release in 1990:

Irrigated rice: 3 varieties

Forecast for Release in 1991:

Lowland rice; 2 varieties

Salt tolerant rice: 2 varieties

V. Marovoay (Northwest) -

Forecast for Release in 1988:

Rainfed rice: 2 varieties

Forecast for Release in 1989/90:

Irrigated, dry season, rice: 4 varieties

Deepwater rice: 1-2 varieties

Lowland rice; 1-2 varieties

Forecast for Release in 1991/92:

Irrigated, dry season, rice: 2 varieties



Appendix C

LIST OF PERSONS CONTACTED

Ministry of Scientific Research and Technical Development (MRSTD)

Dr. Razafindrakoto Charles, Director General of FOFIFA
Dr. Ravohitrarivo Clet Pascal, Scientific Director of FOFIFA
Mr. Rasolo Francois, Chief of Department of Research and Development (DRD)
Dr. Pierre St. Claire, ISNAR Representative, FOFIFA
Mme. Raharinirina Jeanine, plant breeder, FOFIFA
Mme. Rakotoarisao Jacqueline, agronomist, FOFIFA
Mme. Ravatomanga Jeanine, rice breeder, FOFIFA
Mme. Rabenantoandro Yvonne, chief agronomist, FOFIFA
Mr. Andrianilana Fidelis, farming systems researcher, DRD
Mr. Andrianoroosa Desire, agricultural economist, DRD
Mr. Rakontonjanahary Xavier, geneticist, FOFIFA
Mr. Ratovo Abel Lucien, farming systems researcher, DRD
Mr. Rasolofo Pierre, plant physiologist, FOFIFA
Mr. Rajaonarison Jean Baptiste, rice production, FOFIFA
Mr. Rabeson Raymond, pedologist

Ministry of Agriculture (MPARA)

Mr. Ramarokoto Daniel, Secretary General
Mr. Achille Raharison, Director of Agricultural Extension (DVA)
Mr. Eugene Rakotobe Rabehevitra, Chief, Vegetable Protection Service (quarantine)
Mme. Randriamahasonana Marie Albine, Head Quarantine Service
Mr. Rananantana, Chef du Zone, DVA, Mahjakandrina
Mr. Claude, SOMALAC

IRRI Rice Research Project

Dr. James Hoopper, Agronomist and Team Leader
Dr. B.B. Shahi, Plant Breeding Expert
Dr. John Flinn, Project Backstop Officer

American Embassy

Mr. Samuel Rea, AID Representative
Ms. Donna Stauffer, Project Development Officer
Mrs. Julie Rea, Human Resources Officer

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Donor Representatives

- Ms. Solange El Fasi, World Bank Advisor to the DVA
- Mr. Andre Hupin, FAO seed project
- Mr. Guido D'onofrio, FAO fertilizer project
- Mr. Lal Mohammed, FAO quarantine project
- Mr. Quan Doan, World Bank project officer for Small Irrigated Perimeters Project
- Mr. Roland Guis, IRAT
- Mr. Yves Pigot, IRAT
- Mr. Feo, IRAT
- Mr. Simon, Caisse Centrale and Project for Research and Development, Lac Aloatra

Numerous farmers, merchants, and input suppliers in the vicinity of Mahjakandrina