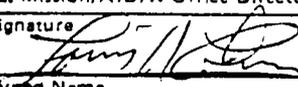


1. PROJECT TITLE DS/DU/DI 509-14 IRT: Sorghum Milling			2. PROJECT NUMBER 698-0407.08	3. MISSION/AID/W OFFICE USAID/Botswana
5. KEY PROJECT IMPLEMENTATION DATES A. First PRO-AG or Equivalent FY <u>80</u> B. Final Obligation Expected FY <u>81</u> C. Final Input Delivery FY <u>82</u>			6. ESTIMATED PROJECT FUNDING A. Total \$ _____ B. U.S. \$ <u>54,000</u>	4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) <u>FY 82-1</u> <input checked="" type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION
7. PERIOD COVERED BY EVALUATION From (month/yr.) <u>3/80</u> To (month/yr.) <u>3/82</u> Date of Evaluation Review <u>2/82</u>				

B. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Decision on PACD extension	USAID/RIP/RIIC	3/31/82
2. Decision on additional monies for project grant to help fund a spare parts/servicing mechanism and possible follow on extension activities.	USAID/AID/RIP	3/31/82

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS <input type="checkbox"/> Project Paper <input type="checkbox"/> Implementation Plan e.g., CPI Network <input type="checkbox"/> Financial Plan <input type="checkbox"/> PIO/T <input type="checkbox"/> Logical Framework <input type="checkbox"/> PIO/C <input type="checkbox"/> Project Agreement <input type="checkbox"/> PIO/P <input checked="" type="checkbox"/> Other (Specify) <u>extend PACD</u> <input checked="" type="checkbox"/> Other (Specify) <u>additional funds</u>	10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT A. <input type="checkbox"/> Continue Project Without Change to include B. <input checked="" type="checkbox"/> Change Project Design and/or additional funds and time <input type="checkbox"/> Change Implementation Plan C. <input type="checkbox"/> Discontinue Project
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11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles) James Roush, Development Assoc., Inc. Lea Knott, Development Assoc., Inc. Helen Gunther, USAID, A/ADO David Inger, RIP Geoffrey Ramaribana and Dipha Parker, RIIC	12. Mission/AID/W Office Director Approval Signature  Typed Name <u>L.A. Cohen, Director</u> Date _____
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SORGHUM MILLING

IRT Project No. 698-0407.08

Country: Botswana

Total U.S. Funding: \$54,000

AID Project Approval: March 4, 1980

Grant Agreement: April 3, 1980

PACD: March 31, 1982

SUMMARY

This project is carried out under a grant agreement between USAID/Botswana and Rural Industries Promotion (RIP), Botswana, a nonprofit association. The original grant in the amount of \$41,000 signed April 3, 1980, was used to expand the workshop facilities of the Rural Industries Innovation Centre (RIIC), Kanye, Botswana. Project Activity Paper Amendment No. 1 increased the grant amount from \$41,000 to \$54,000. The additional \$13,000 enabled RIIC to fill the position of Chief Extension Officer and provided \$1,550 for contingencies.

This project had its beginning in a 1977 survey of 53 villages, carried out by the RIIC Extension Service and the Southern District Council in planning their rural development program. The problem most frequently cited by villagers was that of handstamping sorghum grain for cooking. The shift in consumption from sorghum meal to maize meal was attributed to the fact that maize meal was available commercially as flour; thus the need for handstamping was eliminated. The medium-scale sorghum mill established with the cooperation of the International Development Research Center of Canada (IDRC) at Pitsane did not meet the need of the majority of Botswana's citizens who live in small villages. This fact led to the initiation of a new project at RIIC to develop a prototype dehuller of a type suitable for small-scale sorghum milling systems in Botswana villages. Tests at RIIC with the small-scale dehuller developed in cooperation with the IDRC demonstrated that a small-scale mill could be operated profitably.

This IRT activity was undertaken to establish a production unit at RIIC. This required the expansion of the existing workshop and the purchase of production equipment. Under AID assistance in the grant agreement, five sets of sorghum milling dehullers were to be produced and sold, and operators were to be trained, permitting the establishment of five sorghum mills. Under the activity, payment for these mills was expected to permit the production of additional dehullers and the acquisition of auxiliary equipment for the establishment of five additional mills. The performance and economic feasibility of the mills were to be tested and the impact of the mills on the villages in the vicinity was to be monitored and evaluated.

Shortly after the IRT activity was initiated, the Ministry of Commerce and Industry requested demonstrations of the new mill at a number of district fairs. This in turn led to a much greater level of demand for mills than

had been anticipated. Over 20 mills have been manufactured and installed in contrast to the 10 planned in the Activity Paper. Thus the activity has far exceeded its original goals, but in so doing RIIC has overextended itself, thereby exacerbating financial and managerial weaknesses in the organization--see unplanned effects below.

RIIC has encountered a number of problems in carrying out the activity, most of which have been exacerbated by the decision to expand production more rapidly than originally anticipated:

1. With sustained production, technical problems have arisen. RIIC has recently developed a new modified dehuller model which it is ready to produce.

2. Production of these modified dehullers by RIIC was delayed because of a shortage of working capital which resulted in an inability to procure raw materials on time. This was exacerbated by the attempt to expand production rapidly.

3. Management turnover and the inability to find replacements to afford qualified managers have contributed to the financial problems.

4. Providing technical support to customers who have purchased mills was more time-consuming and expensive than anticipated. Again, this was largely caused by expanding too rapidly. This meant that mills were placed too soon in more distant locations. In addition, a larger number of mills were set up before the "bugs" were worked out of the prototype model, thereby magnifying the support problem.

5. Resupply of stones for the hammer mills, which need to be replaced after about three months of operation, is a problem because there is a single producer in South Africa and the producer requires advance payment prior to initiating production.

6. It has become increasingly difficult to coordinate the training courses for the new mill owners and operators at RIIC, particularly with the rapid expansion of the program and its extension to more remote parts of Botswana. RIIC now plans decentralized training for shorter lengths of time in the villages, rather than holding courses at RIIC.

Evaluation Methodology

This project review constitutes the final evaluation of the IRT sorghum milling project. USAID/Botswana planned the evaluation to coincide with the visit of the IRT, AIP, and WID evaluation team from Development Associates, Inc. Project files have provided the source for a part of the material presented in this review. Data on the current status of the project was obtained in interviews with RIP and RIIC staff.

Participants in the evaluation:

David Inger, Managing Director, RIP
Geoffrey Ramaribana, Acting Manager, RIIC
Dipha Narayan Parker, Chief Extension Officer, RIIC
Helen Gunther, IRT Project Officer and Acting Agricultural Development Officer

James Roush, Consultant, Development Associates, Inc.
Lea Knott, Consultant, Development Associates, Inc.

The Project Activity Paper does not include a project logical framework. The sections of this evaluation which deal specifically with purpose, inputs, and outputs as they are described in the PES format are discussed in terms of the purpose, objectives, and implementation plan presented in the grant agreement.

External Factors

RIP and RIIC were established as operating institutions at the time this project was undertaken. The need for the small-scale milling system had been established, a prototype produced and tested. These factors have contributed to the success of the project.

Local government officials have in general supported the activities undertaken under the projects; e.g., the survey to determine the impact of the small-scale milling systems on the villages. In addition, the Ministry of Commerce and Industry requested that RIIC prepare a mobile unit which was then used to demonstrate the new sorghum mills in district agricultural shows in May-June and September-October 1980. This no doubt contributed to the rapid increase in demand for the RIIC-designed sorghum mills.

Inputs

Few difficulties were encountered in procurement of the U.S. funded construction material and equipment which was used in expanding RIIC workshop facilities. A waiver was requested on April 22, 1980, and approved on April 23, 1980. This permitted purchase in South Africa of equipment, commodities and materials in the amount of \$26,000.

RIIC procurement difficulties are the result of its cash flow problem. The present backlog of orders at RIIC is the result of lack of sufficient funds to order grinding stones from South Africa far enough in advance to complete the orders on time.

The impact survey called for in the grant agreement was delayed because of the lack of sufficient funds to employ a Chief Extension Officer. The situation was remedied by Amendment No. 1 to the grant agreement which permitted the employment of a Third Country national. The Chief Extension Officer's contract terminates with project termination on March 31, 1982.

Outputs

The specific objectives described in the grant agreement have been achieved, often to a remarkable degree. These objectives fall under the following general headings:

Workshop Expansion and Production. RIIC workshop expansion was completed and production equipment installed during the first six months of the project. Five dehullers were produced, assembled, and the auxiliary equipment was purchased during the same period. Although the grant agreement calls for mills to be set up and operators trained at five locations in Botswana, a total of 22 mills are in operation in locations throughout the country.

Impact Survey

The impact survey carried out by the Chief Extension Officer used a questionnaire prepared by an IDRC consultant. The data allow certain tentative conclusions:

1. A sorghum mill in a village saves 2.5 hours in work time which a woman may use for other household chores, leisure or additional income production. The women surveyed used 41% of the time saved to engage in activities which increase their income.

2. The factor which most affects the use of the sorghum mill is distance between household and mill. This may vary from next door to 3 km. Mill owners could increase usage by providing simple transport--e.g., a donkey cart. RIIC is producing carts at present but none has yet been sold to mill owners.

3. Profits realized by mill owners are difficult to calculate as no standard system has been established for accounting.

4. Mill owners do not have sufficient storage space to handle the volume of sorghum the mills are capable of processing. RIIC is at present developing a design for a storage structure.

5. It is costly to millers to shift the mill operation back and forth during the day between commercial and service milling. They now allocate a specified part of each day for each operation.

Purpose

"The purpose of this grant is to provide support for the Rural Industries Innovation Centre's project to promote a lower cost sorghum milling process in Botswana."

The purpose of this project has been achieved, but the successful promotion of the new process has brought on a new generation of problems. Except for the instances in which mills have been purchased by cooperatives or village associations, the direct beneficiaries of this project are the mill owners and the newly hired employees, usually 5 or 6 per mill.

An individual who has become a mill owner is economically in a position superior to other members of the community. He must have or be able to obtain P9,000 for the purchase of the mill. The mills in general are set up in communities of 3,000 to 4,000 people. The benefit which these people receive is in the availability of a labor-saving device at a price which they can afford. The impact survey indicates that the 41% of their time which the women save in using the mill is used by them to increase family income.

Unplanned Effects

The rapid increase in demand for the small scale sorghum mills was not anticipated. The attempt to respond rapidly to this demand created, or exacerbated, problems of implementation of the activity, as discussed in the Summary above. In addition, it created a much higher demand for working capital.

both for raw materials for new production and for spare parts for a larger number of operating mills. This, perhaps coupled with inadequate financial management of all activities of RIIC, has created a cash flow crisis situation. This in turn has resulted in the dismissal of a number of employees and delays in ordering spare parts for operating mills and materials for construction of additional dehullers and other mill components. Thus RIIC is not in a position to fill the additional orders it has. It anticipates that at least 20 additional mills could be sold.

The problems of resupply of stones for the hammer mills was not anticipated. With the possibility of the establishment of another 20 mills, it is imperative to establish a reliable system of resupply. It may be economical to produce them in Botswana. It is possible that other spare parts or supplies could also be economically produced in Botswana. This should be studied.

The logistical problems of support to new mills was not anticipated, in part because it was not initially planned to expand so rapidly, especially to the more remote areas. This problem also has serious financial implications. Therefore it is important that the problem be dealt with soon. Possibilities for alleviation which are being considered include contracting with an individual or organization to handle support in the northern area and/or charging for support services. The IRT grant provided funds for supporting five mills, not 20.

The success of the small sorghum mills has led to inquiries from Zimbabwe, Zambia, Kenya, Nicaragua, Tanzania and Senegal. The sale of a mill to Zimbabwe is under negotiation. This raises the need for a means to work with organizations in other countries to develop their own prototypes, utilizing the RIIC model as a starter. Can RIIC afford to provide the means? In addition, it is quite possible that RIIC could manufacture models for use in neighboring countries if it had the management and financial capabilities. The question can be raised, however, if RIIC should devote so much of its resources to such a level of manufacturing or rather focus more on meeting the second generation problems associated with the increased use of the new mills in Botswana.

Since such a rapid increase in demand for the mills was not anticipated, inadequate study has been made of the overall impact on sorghum production and consumption from a further expansion of milling. An attempt was made in the impact surveys to determine the likely impact on production by farmers newly serviced by mills. However, the frequent changes in weather conditions make it very difficult to isolate the effect on production of the proximity of a mill. Further study is probably needed also of the extent to which additional mills can be established before the profitability of existing mills is seriously affected.

Initially RIIC established a mark-up of 15 percent on the mills it sold. However, management decided not to increase the price in 1981 to take account of inflation. The mark-up dropped to about 8 percent. Pricing policy, as well as the system of cost accounting, should be reviewed, perhaps with the help of outside experts.

Lessons Learned

When going from prototype to field testing, keep the size of the test manageable. The importance of extension activity becomes crucial in at least two ways:

1. Insuring that the testing is properly carried out.
2. Providing feedback to the design unit.

Special Comments

The carrying out of this activity has contributed somewhat to the financial crisis now facing RIIC, largely because of a too rapid expansion of the activity. Nevertheless, the magnitude of the second generation problems have been ascertained earlier than they might otherwise have been. It would seem appropriate, therefore, for AID to provide some additional assistance to help find solutions to the problems identified; e.g., carry out the studies cited in the Unplanned Effects section above, and beef up the extension unit. Some input of Peace Corps volunteers also might help maintain some activities of RIIC that might otherwise have to be suspended.