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AN EVALUATION OF BRAC'S  
RURAL ENTERPRISE PROJECT (REP)

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## Introduction

For the purpose of this report, the evaluation team has agreed on a division of labor corresponding to each person's interest and experience. While Dr. Latif examines REP from an economics perspective, Mr. Wiebe will focus on the organizational aspects of the Rural Enterprise Project. The first section of this report presents a summary of the recommendations made by the evaluation team. The second section begins by examining the organizational framework of REP, starting with a consideration of REP objectives. This discussion of objectives establishes a basis for increasingly more specific analysis of REP strategy and staffing, the project's working methodology, and the specific support used by the project. The third section of the report considers current REP projects from an economics perspective, with an eye on making recommendations for work in the future.

There is little doubt in our minds that there is adequate justification for an action-research project designed to develop new economic opportunities for BRAC's landless groups. The field visits clearly indicate the potential for such a research unit to develop new or improved technologies. While not all of the on-going projects reflect the best use of REP time, it is clear that a wide array of possible projects exist. Moreover, it is evident that RDP, the basic group formation component of BRAC, is not able to experiment adequately in these fields, as staff attention is correctly focused on group organizing and the extension of proven technologies. In this framework, REP can play a vital role in supporting BRAC's work with landless groups.

It is important to state from the outset that we were favorably

impressed by the work conducted by REP during the past 3 years, and that the criticisms and recommendations given below reflect, in our minds, opportunities for improvement and growth in the future, and should not be construed as an indictment of failure in the past. The comments below merely reflect our suggestions for improving this project in the future.

### Section 1: Summary of Recommendations

#### Organisational Aspect

##### I. REP Objectives

- I.1. Draft a new statement of objectives which narrows and *focuses the scope of activities expected of REP staff.*
  - A. Prioritize projects in terms of scope for employment and marginal returns.
  - B. Focus on more innovative projects.
  - C. Minimize energies devoted to fine-tuning traditional (i.e., well-known and accepted) activities.
  - D. Clarify the division of labor between REP, TARC, RDP and RED. REP should focus its energies on performing research on new projects, and leave the training and implementation for other divisions within BRAC.

##### II. Strategy, Structure and Staffing

- II.1 Provide more direction in overall project planning.
- II.2 Diversify and enlarge the REP Staff.

- II.3 Devote REP research resources to the task of developing "appropriate management" technologies for transfer to RDP groups.
- II.4 Make a concerted effort to appoint women to the project's upper level decision-making positions, with or without expansion. Although this recommendation comes somewhere towards the middle of this report, we would like to emphasize this as one of the most important criticisms of the current REP structure and strategy, and one which should be among the first redressed.
- II.5 Recognize the limits of REP staff and refuse or delay projects where knowledgeable and competent staff are unavailable.

### III. Methodology

- III.1 Increase and formalize the participation of RDP group members, RDP staff, and related BRAC staff in the process of idea generation and work evaluation. REP staff should see RDP group members and the RDP field staff as the primary source of new ideas and of overall project evaluation.
- III.2 Include in feasibility studies the down-stream project-related costs which will be covered by REP, RDP, or other BRAC agencies.
- III.3 Include in feasibility studies predictable "unusual" costs and benefits which are likely to be realized by the groups.
- III.4 Beware of forward and backward linkages, and include

these whenever possible in original feasibility study calculations.

III.5 Avoid replicating projects within REP once a project profile has been completed.

#### V. Focus on Women

V.1 Identify the applications of technical assistance before commissioning such input.

V.2 Use resources available from other NGOs or individuals in-country before investing REP resources.

#### Economic Aspect

##### I. Horticulture

I.1 Time has not still come to replicate horticulture program to other areas, and REP should experiment further with intensive care.

I.2 REP should take up alternative crop production under the winter vegetable cultivation program.

I.3 REP team of economists should evaluate any such program in terms of both economic and social cost-benefit, rather than simply in terms of incremental income.

##### II. Mushroom Culture

II.1 REP should assess the feasibility of spawn supply from the existing source before further extension of the activity.

II.2 Even though the spawn supply is ensured, REP should not expand production beyond 50 growers, at the moment, since there is also a marketing constraint. Attention should be given to marketing also.

II.3 If production and marketing are expected to rise, REP should

take up mushroom preservation facilities of its own in order to facilitate even better marketing.

### III. Dye House

III.1 REP should explore the possibility of introducing new product such as lachi (small hank of cotton embroidery thread) thread which can substitute entire import of this type of thread. One REP personnel may be sent to India for learning the technology.

### IV. Waste Silk Spinning

IV.1 REP may explore the possibility of increased supply of silk jute waste from Bholahat silk reelers.

### V. Yarn Twisting

V.1 The unit may extend twisting services to private silk weavers at Chapai Nawabganj and Shibganj, in order to increase the capacity utilization of the machine and to employ more women in the activity.

### VI. Power Tiller

VI.1 This program may be replicated to other areas, and RDP should be involved in replication with minimum involvement of REP.

### VII. Brick-field

VII.1 This program may also be replicated to other areas. REP's involvement, in replication, should be confined to feasibility study and preparation of a management profile, and rest of the work should be handed over to RDP.

## VIII. Pisciculture

- VIII.1 Further experiment on shrimp-carp polyculture should be done only with the existing ponds, and new ponds should not be taken up at the moment.
- VIII.2 Programs on carp nursery and semi-intensive telapia nilotika monoculture may be extended to other areas.

## IX. Sericulture

- IX.1 REP is advised to go through the book "Sericulture Industry in Bangladesh", by Zaid Bakht et. al. (BIDS, forthcoming) in order to increase the knowledge base for sericulture extension.
- IX.2 Initially, REP should make a realistic target of producing 3-4 cycles of cocoon per year.
- IX.3 Tree type of mulberry plantation in flood-free areas is suggested.
- IX.4 Chawki rearing system should be followed.
- IX.5 Hot-air cocoon drying system should be applied.

## Section 2: Organizational Aspects of REP

### I. REP Objectives

While the actual wording of REP objectives varies from one document to another, the original project proposal (1985, p11) states,

"REP's basic objective is to increase the long-term, rural income generation prospects for the landless in both farm and



non-farm activities. REP will investigate, test and demonstrate new or improved income earning activities, and organize and train landless people to undertake these activities to increase labor productivity and employment opportunities."

The point in reciting this long passage is to indicate the breadth of mandate given to REP from its inception. It is hard to imagine any development activity which would not fall within the scope of REP. Thus, it is hardly surprising that REP fails to reflect a unifying focus in its project activities or its staffing patterns. Note in particular the inclusion of activities ranging from idea generation ("investigate") to implementation ("organize and train").

Recommendation I.1. Draft a new statement of objectives which narrows and focuses the scope of activities expected of REP staff. While the final composition of this statement should surely be the responsibility of BRAC staff, and not of an external evaluator, I am not unwilling to make recommendations based on my field observations.

I.1.A. Prioritize projects in terms of scope for employment and marginal returns. Too many of the projects under consideration have either small scope for application or extremely small marginal returns which may not justify the investment of REP time. Such small returns are justified when the project is universally replicable with low training costs, but few of these small-scale "businesses" qualify under these conditions.



- 1.1.B Focus on more innovative projects. Again, the price of REP time is quite high, and the staff needs to be certain that it is contributing something unique. While many of the REP projects qualify, several of them are questionable. This "innovation" aspect should be central to REP, and REP should avoid replicating work which either has been or could be done elsewhere.
- 1.1.C. Minimize energies devoted to fine-tuning traditional (i.e., well-known and accepted) activities. While there will sometimes be a role for REP research into improving traditional activities, REP should recognize the danger of devoting too much of its time to such efforts. Often, the marginal returns of the improved method over the traditional method are too small to justify the investment in research and training needed. As indicated above, REP should consider involvement when the expected improvement is large or the new technology is easily transferred. However, before becoming involved in a traditional activity, REP should clearly state which questions concerning the production process need to be answered by REP research staff. The scope of the project should be limited to these questions alone, limiting REP time and effort to a minimum. Again, this recommendation does not rule out involvement in traditional activities, but merely suggests that such involvement may not result in the optimal allocation of REP resources.
- 1.1.D Clarify the division of labor between REP, TARC, RDP.

and RED. The three branches within BRAC (excluding RDP) appear to be performing research, at least the first two are active in training roles, and both REP and RDP overlap in the implementation stage. The precise role of each arm needs to be clearly stated, and REP should be prepared to cooperate with the other branches, allowing each to function within its own area of speciality. There is a tendency to try to do everything on any given project, which again results in a less than efficient use of REP time. REP should focus its energies on performing research on new projects, and leave the training and implementation for other divisions within BRAC.

## II. Strategy, Structure and Staffing

Following the discussion above, it is not surprising to find that an overall strategy for REP is not easily discernible. Moreover, the organizational structure of REP does not provide many clues for a strategic approach to program objectives. Rather, the organization gives the impression of a rather haphazard approach to dealing with rural poverty. While REP staff deserve credit for being receptive to new ideas from many quarters, there does not appear to be enough direction given in setting priorities and moulding the many different projects into a cohesive research effort.

Recommendation II.1. Provide more direction in overall project planning. A small planning cell within REP, with the primary responsibility falling to the Project Manager, should meet regularly to set proactive plans for future research. The

cell should also include the staff economists (and any new Research Staff recommended below), but should not include other project staff. Particularly in an environment where Research Staff compete for scarce resources, the need for a strong Project Manager role is clear.

It will be difficult to identify criteria against which new ideas will be evaluated and selected. Consequently, a management process must be developed around this planning cell which guides decision-making.

Recommendation II.2. Diversify and enlarge the REP Staff. The staffing patterns do not seem to reflect a long-term commitment to this kind of action-research. The current resource allocation between extension and research (the REP budget represents less than 1/2 percent of the RDP budget) is inadequate if BRAC expects significant contributions from the latter. In terms of personnel, the two staff economists (both MBAs) do their job very well, but they are expected to cover too wide a range of projects over too large an area. Moreover, they both require more guidance in setting their own work priorities. Finally, functional specialists are generally unable to provide adequate leadership in their given field, given the time constraints of the two staff economists.

Reporting to the Project Manager, I would recommend a Research Staff of 4-6 people, including the two staff economists. The additional staff should include at least one engineer (preferably a mechanical engineer with appropriate technology experience and hands-on aptitude and experience) and at least one economist (not another MBA), and might also include either a

social scientist or a technical specialist in a field of particular importance to REP (such as Sericulture). From the field trips, it is my impression that this would entail either transfers from within BRAC (outside REP) or the appointment of new staff from outside BRAC to work with the staff economists at this analytical/conceptual level.

The larger multi-disciplinary team adds not only increased supervisory capacity over on-going projects but also, and more importantly, the opportunity for technical interaction, which will serve both to generate new ideas and also to provide checks on the development of new ideas. The team of two MBAs has served fairly well in generating new ideas, but each is less likely to bring a new perspective to ideas proposed by the other.

Reporting to the research staff, REP should maintain a cadre of specialists with responsibility to specific projects. However, these people should not necessarily be seen as permanent REP staff, as research in their field will likely cease following the development of a project profile. If these staff members are hired on a temporary basis, however, they may not possess the proper motivation to complete their work as soon as possible (in fact, quite the opposite incentives will probably prevail). One possible solution to this dilemma, suggested by several BRAC staff members, is to pass on the specialists to RDP or other BRAC agencies, where they could work as senior extensionists or staff trainers. This would allow BRAC to retain these specialists while at the same time freeing REP to begin new research.

Recommendation II.3. Devote REP research resources to the task of developing "appropriate management" technologies for

transfer to RDP groups. Such a diversified staff as described above would also free the two management specialists (or "staff economists") to try new approaches in their own field of specialty, which is sorely needed within REP in any case. Currently both are too tied up in project maintenance to experiment much in creative "appropriate management" approaches. Within the context of a diversified team, this could easily be the major priority of at least one of the current staff economists.

Recommendation II.4. Make a concerted effort to appoint women to the project's upper level decision-making positions, with or without expansion. It is remarkable that for a project with a focus on women's groups and their particular needs, REP staff does not include any women. Although this recommendation comes somewhere towards the middle of this report, I would like to emphasize this as one of the most important criticisms of the current REP structure and strategy, and one which should be among the first redressed. Particularly in light of the preceding recommendation for expansion, the new positions on the Research Staff, and the corresponding planning cell should be filled with qualified and experienced female staff. Such women definitely exist in Bangladesh, and it is a blot on the REP record to have a project designed to help rural women run by an all-male staff.

Recommendation II.5. Recognize the limits of REP staff and refuse or delay projects where knowledgeable and competent staff are unavailable. As part of decision-making process, staff experience and staff time must be considered important variables. While the staff economists have shown considerable skill in



taking on entirely new projects, such efforts involve a considerable cost in terms of educating the REP staff from scratch. Clearly, this will be necessary in cases where the potential returns are very high, but such an approach should be the exception, not the rule.

### III. Methodology

A recent BRAC publicity booklet (January 1989) describes the REP working methodology as follows:

- a) idea generation;
- b) feasibility study;
- c) project selection;
- d) project plan development; and
- e) implementation, monitoring, and evaluation.

The field visits indicated that REP has succeeded in consistently following this format. At several of these stages of the methodology, however, changes might improve the research performed by REP staff.

Recommendation III.1. Increase and formalize the participation of RDP group members, RDP staff, and related BRAC staff in the process of idea generation and work evaluation. Currently, REP staff report significant exchange of ideas between themselves and staff from other BRAC projects, particularly RDP. But this relationship is informal and probably less important in actual planning than has been indicated. REP staff should see RDP group members and the RDP field staff as the primary source of new ideas and of overall project evaluation. The current approach places far too much power for project development in the

hands of the researchers and far too little in the hands of the future practitioners.

It is necessary to develop appropriate structures for communication to ensure RDP participation. Without such institutionalization of input channels, it is far too easy for the research arm to lose contact with the needs of the extension arm. Perhaps a few readings of Robert Chambers' research on Farming Systems Research methodology (Farmer-First-and-Last approach) would be appropriate for REP Research Staff.

**Recommendation III.2.** Include in feasibility studies the down-stream project-related costs which will be covered by REP, RDP, or other BRAC agencies. Currently, the costs borne by REP, or other BRAC programs (in particular, the costs of training group members), are not entered into the calculations of determining the feasibility of any project. However, these costs may be important in distinguishing between competing possibilities, and may also lead to decisions not to pursue projects which are particularly expensive for BRAC. These calculations should include costs likely to be incurred by REP during the research phase and those incurred by RDP in the extension phase.

This is not to suggest that REP never cover these costs, but these expenses should be clear from the outset. This may be particularly important for projects which include a long-term BRAC support function.

**Recommendation III.3.** Include in feasibility studies predictable "unusual" cost and benefits which are likely to be realized by the groups. A feasibility study can be done from



various perspectives. While BRAC may be interested in knowing the financial viability of a project, the group may actually incur other costs or receive additional benefits which have been omitted from the financial analysis. These might include the salaries of group members employed by a project, which are currently calculated solely as a cost to the enterprise, or the costs of likely profit skimming or other unsavory business practices which might be predictable in a given setting.

**Recommendation III.4.** Beware of forward and backward linkages, and include these whenever possible in original feasibility study calculations. Most employment generating enterprises of any significance are likely to have implications beyond the simple task of production. Particularly where a good is traditionally produced and marketed, these linkages will probably imply greater benefits as local markets expand. For non-traditional goods, however, production may require considerably greater involvement in both the procurement of necessary materials and the marketing of the final product. These efforts, too, may lead to additional employment in new sectors. However, they will almost certainly require additional investment of time and monetary resources, and will probably imply a greater risk of overall project failure than was originally calculated.

**Recommendation III.5.** Avoid replicating projects within REP once a project profile has been completed. Emphasis should be placed on completing research on a given project and transferring the work outside REP. Currently, REP is perhaps too cautious in terms of extending technologies which have already been proven. Again, REP should be viewed as an innovative body. Once the

creative stage has been completed (with the results in a project profile), REP should be eager to move on to new efforts. REP should be prepared to assist RDP in revising original profiles following the initial stages of implementation, but even here, RDP should be forced to take the lead in this process, with REP staff providing the necessary support.

#### IV. Focus on Women

The REP intention of focusing on women was enunciated on several occasions during the field visits. Given the staffing concern expressed above (III.4) and the projects visited during this evaluation, however, it appears that there remains considerable room for improvement in this regard. Much of the fish and fish/shrimp work, for example, has been extended to men, although this apparently will be different in the planned extension of nilotica culture.

Recommendation IV.1. While actively seeking projects for women's groups, remain open to conducting research on behalf of men's groups, particularly when the potential return is high. The desire to focus on women is laudable, but the project should not allow this to become dogma, restricting research on projects with high potential. For such projects, investigations should also be made into the barriers precluding women's involvement. Again, it is imperative that REP upper level staff include women who may be able to address these questions.

#### V. Sources of Technical Assistance

Rather than propose any new sources of technical assistance, this section is limited to observations about past utilization of

such resources. These experiences offer insights to better use in the future.

**Recommendation V.1.** Identify the applications of technical assistance before commissioning such input. At the beginning of REP, two foreign consultants were brought in to study possibilities in food processing and livestock and improvement. While both prepared reasonable reports, their assistance was never put into practice. This type of expert should be used only in the middle stages of project development, when applications have already been identified, and not for the purpose of idea generation. The use of an expert in reactive dyeing, for example, is a reasonable use of outside input, as the application was already clear. Similarly, the consultant for shrimp culture from the UK represents an example of proper utilization of outside resources.

**Recommendation V.2.** Use resources available from other NGOs or individuals in-country before investing REP resources. Several projects give the impression of REP "re-inventing the wheel". Whenever information is available in-country, REP can invest some time in retrieving this information and putting it in a form useable by RDP groups. These projects should require minimal effort from REP, and should not be allowed to distract REP staff from other projects.

### Section 3: Economic Aspect of Evaluation

#### I. Horticulture

In all, 381 farmers with over 41 acres of land were brought under winter vegetable cultivation by REP in Manikganj area in the 1987/88 season. In the 1988/89 season, the cultivation was extended to 499 farmers with about 50 acres of land in the same area. The benefits from the program in the 1988/89 season are estimated as follows:

Net earning per decimal of land	:	Tk. 159
Net earning per grower for 4 1/2 months	:	Tk.1,768
Net earning per grower per month (from average 10 decimal of land)	:	Tk. 393

According to the growers, there has been a net incremental productivity of 20-50% (say an average of 33%) under the REP supervised cultivation from the level of their own earlier cultivation practices. Thus the marginal increase in income works out at about Tk. 130 per grower per month for a period of 4 1/2 months. The total incremental income from the program as a whole arrives at Tk. 262,350. To have this amount of incremental income, the extension cost, particularly in terms of REP resources, is also expected to be very high, but we do not have ready information on that. But it appears that the incremental benefit (financial) may exceed the additional resource costs. Thus REP has tended towards a success in this field. The program has also other favourable impact such as it has demonstrated a better use of scarce resources, the land, and the local non-REP farmers will also, by demonstration, benefit from this project.

However, the following recommendations are put forward regarding the winter vegetable cultivation program:

Recommendation I.1. Although the program has tended towards successes, time has not still come to replicate it to other areas, and REP should experiment further with intensive care. A multiplicity of factors are involved in the rise of production as well as earnings of the farmers. This type of action research needs careful investigation in order to identify the factors responsible for contributing to the incremental income and to see the possibility of further rise in income. On further experiment, REP may be able to produce a workable profile for other areas.

Recommendation I.2. REP should take up alternative crop production under the winter vegetable cultivation program. Currently, the farmers are kept under the cultivation of certain varieties of vegetables which are common in the area. Most of these are perishable and cannot be preserved. In the face of increased production of these items, the prices are likely to fall very sharply, and the farmers will find it unprofitable to do so. Therefore, by forecasting market prospects, REP may introduce alternative or new crops. In this case, it is suggested that REP may introduce the cultivation of HVV onions and garlic which are almost unknown to the area, can be easily preserved and stored, and are in short supply in Bangladesh. This possibility, which is likely to be more remunerative, can be explored by REP.

Recommendation I.3. The REP team of economists should evaluate any such program in terms of both economic and social cost-benefit, rather than simply in terms of incremental income, in order to see whether or to what extent its objectives are fulfilled.



## II. Mushroom Culture

In Hanikganj, the mushroom culture program was undertaken by REP in April 1988. During the season April-September 1988, about 78 kg of mushroom was produced by 20 growers in 296 beds. The benefits are estimated as follows:

Net earning/grower for 5 months	:	Tk. 257
Net earning/grower/month	:	Tk. 51

Net monthly earning per grower is very low. As explained by the growers and the REP team, the low earning has been due to suboptimal level of cultivation (3-4 beds per woman per month) as against the optimal level of 25-30 beds. Spawn supply has happened to be the main barrier to optimal level of operation. However, this is an off-time occupation of the housewives and it requires negligible amount of labour involvement. During the course of our field visits, we have observed that there is a pressing demand from the growers's side that they want to continue with the occupation. But, since at the existing level of operation the gross financial benefit is only Tk. 5,114, the project seems to be not viable if we consider REP resources involved. The net financial benefit would possibly be negative by a large sum of money (this will have to see by the REP economists). However, if the spawn supply could be guaranteed and an optimal number of beds be provided to the growers, then only the net earnings are likely to rise and net financial benefit would rise by large sums. But again, there seems to be a marketing constraint.

Recommendation II.1. Prior to further extension of the activity, REP should assess the feasibility of spawn supply. REP should explore the possibility of increased supply from the existing source, MCC, for short-run expansion of the program. When, in the long-run, the project will be proved viable, REP may go in for establishing its own spawn production unit.

Recommendation II.2. Even though the spawn supply is ensured, REP should not expand production beyond 50 growers in the coming season since there is also a marketing constraint. The REP should give endeavor to expand marketing. Since consumption of mushroom still remains limited mostly to the foreigners, its marketability is likely to rise very slowly in the short-run. Mushroom happens to be a costly item and REP should take market promotion activities to make awareness among the richer section of the population. A time might come when its supply would create its own demand. In the long-run, export possibilities may also be explored. We are not at all pessimistic of future expansion of mushroom culture and thus of generating employment and income for the poor.

Recommendation II.3. If production and marketability of mushroom are expected to rise, then REP should take up mushroom preservation facilities of its own in order to facilitate better marketing.

### III. Dye House

The dye house project located at AAF (Ayesha-Abed Foundation) in Manikganj appears to have been a significant contribution of REP in several ways. This project went into operation in March 1988. During March-December 1988, the average



monthly output of dyed yarn was 58 kg and it has been increasing since the inception. Cloth dyeing started in July 1988. The average monthly dyed cloth production was 323 metres during July-December 1988. It currently provides full employment to 5 persons and their daily wage rate varies from Tk. 25-30. The REP has introduced new systems of dyeing such as reactive dyes and vat dyes. According to Aarong, sales of cloth with reactive dyes have increased recently.

Recommendation III.1. The REP may explore the possibility of introducing some new products in the dye house. To mention specifically, REP may try for making lachi thread (small hank of cotton embroidery thread) which is still being totally imported from abroad, particularly from India and China. One REP personnel may be sent to India to learn the technology.

#### IV. Waste Silk Spinning

Waste silk spinning by hand on a simple charka has been traditionally in vogue in Bangladesh, particularly in Chapai Nawabganj district, since long past. But REP introduced waste silk spinning in AAF (Manikganj) with an Amber Charka system. The project went into operation in September 1987. Silk jute waste collected from Rajshahi Silk Factory (RSF) is used to spin coarse yarn to feed the weaving of Aarong. Currently the rate of capacity utilisation of the set of equipment is only 50%. The low utilisation rate is due to insufficient supply of silk jute waste. However, if and when the REP program and also the Bangladesh Sericulture Board's (BSB's) expansion program on sericulture will come into effect the supply problem is expected

to reduce, and thus there is a possibility of replicating this activity in other BRAC areas as well.

At present 12 women are employed full-time in this activity. Their daily wage rate varies from Tk. 20-25. Moreover, with the spun yarn, AAF is producing varieties of fabrics which fetch remunerative prices in the market. This program is a successful one.

Recommendation IV.1. The REP may explore additional sources of supply of silk jute waste in order to increase the level of capacity utilisation at present. Private silk reelers of Bholahat under Chapai Nawabganj district, who reel silk yarn from cocoon on Katghai (an indigenous reeling device) and are known as katghaiwallas, are a possible source of supply. The REP is advised to explore this possibility.

## V. Yarn Twisting

The operation of yarn twisting under REP started in April 1988 at AAF in Manikganj. It facilitates AAF to twist its own consumption of silk and cotton yarns.

The machine used for twisting is a replica of a Japanese machine. The cost of the machine was only one-eighth of a similar Japanese machine.

During October-November 1988, the average monthly production of twisted yarn was about 105 kg (27 kg silk yarn and 78 kg cotton yarn). Currently, 14 woman workers are employed in this activity. Their daily wage rate is Tk. 15.

The current rate of capacity utilisation of the machine is only 20-25%. This project is integrated with the AAF and so far it has remained to provide services to the AAF. The limitation

of the use of twisted yarn by the AAF is the main reason for underutilisation of capacity of the twisting machine.

However, this has been a significant contribution of REP.

Recommendation V.1. The unit may extend twisting services to the private silk weavers at Chapai Nawabganj and Shibganj, who often face problem in twisting their own yarn due to lack of this facility. This will benefit the unit not only in increasing the capacity utilisation of the machine but also by providing employment to more woman workers. At the same time, this will benefit the private silk weavers in need. This possibility should be explored by REP.

#### VI. Power Tiller

This program started in October 1987 with one Yanmar machine in Manikganj area. An additional 4 Sifang power tillers were introduced in July 1988. The REP has already planned to introduce more power tillers in various areas. In the last season, the group members of Manikganj, from this lone Yanmar machine, earned a net income of Tk. 29,661. This is an important project in view of both income earning activity of the landless groups, and services provided to the landowners who have shortage of draught animals.

This is, in fact, an old industry which is well-accepted and well-understood. The REP innovation here appears to be appropriate management for groups.

Recommendation VI.1. This project is worthy of replicating to other areas. But any replication should be performed by RDP with minimal support from REP.

## VII. Brick-field

The brick-field in Manikganj produced about 2 million bricks during 1987/88 season. Net profit was Tk. 209 thousand of which Tk. 57 thousand was paid as dividends to share-holders. It provided employment to over 250 persons for a period of 5 months during the season. Rate of return on investment was nearly 19 per cent.

This is also a traditional industry. The major innovations REP has made in brick-field are appropriate group management and certain fuel saving devices. This is a proven project.

Recommendation VII.1. This project may be replicated to other areas, and REP has also a plan to do so. In fact, when we were on a visit to Boilor area under Mymensingh district, the people there demanded a brick-field in order to keep themselves employed for 7-8 months in a year. They also informed us that there was a good demand for bricks there. The REP may consider this point. The REP's involvement, in replicating this project, should be confined to feasibility study, and rest of the work should be handed over to RDP with management profile.

## VIII. Pisciculture

The programmes so far undertaken by REP include: shrimp-carp polyculture (Kalaroa under Satkhira district and Boilor under Mymensingh district), carp nursery (Boilor), *telapia nilotika* monoculture (Boilor), semi-intensive shrimp culture (Jessore), intensive shrimp culture (Mymensingh), and a hatchery (Rajendrapur under Ghazipur district).

In 1987/88, 38 ponds with 8.45 acres of water body in 5

centres were undertaken for shrimp-carp polyculture. In the following year, this culture was further extended to additional 14 ponds with 6.93 acres of water body. Harvesting is yet to do.

In the year 1987/88, 15 ponds were affected by flood. The results of the unaffected 22 ponds are shown below:

Kalaroa: 10 ponds

Earning/decimal of water body	: Tk. 71
Earning/group member	: Tk. 100

Kazirhat: 12 ponds

Earning/decimal of water body	: Tk. 71
Earning/group member	: Tk. 100

The results show very poor performance. This is not the end of the story here. The above figures for Kalaroa are excluding the lease value of land. If lease value (on which we do not have data) are taken into account, then there might have been even losses. Ken Marshall's evaluation on both REP and RDP ponds together for the year 1986/87 shows even worse results - 50% of the ponds incurred losses. The main problems appear to have been technical, managerial, and social. The technical problems have been improper fertilization of ponds and improper feeding of fishes. The managerial problem has been mainly the mistrusts of the group members on the management committee. The social problems include occasional theft of fishes from the ponds, and also occasional credit sales which are often unrealisable. Other marketing problems are nil.

However, during the course of our field visits the farmers have reported that they are expecting better returns this year



than the earlier years. But, given the REP time and resource cost and the returns, this program has still remained far from being satisfactory. Nevertheless, the REP's success here is that this program has created awareness among the local people who have already tended to come into this culture by private initiatives.

Carp nursery by now is a mature program which was started in 1985 in Boilor area. During April-September 1988, average net income per decimal of water body varied from Tk. 185-310. This program appears to have been somewhat successful. The marketability of fingerling has been reported to be very encouraging.

Semi-intensive *telapia nilotika* monoculture program was started in June 1988. In all, 17 small ponds with 37.5 acres of water body were stocked with improved variety of *telapia nilotika*. Net income per decimal of water body is estimated at Tk. 54. This income is also on a very low side. However, this culture requires minimal labour input, easy to cultivate, and is participated mainly by women. It is cultivated in seasonal water bodies, the opportunity cost of which is almost nil. On the above grounds, the REP's innovation here seems satisfactory. Nevertheless, the program should be evaluated in terms of extension cost and net financial benefit.

Semi-intensive and intensive shrimp culture was undertaken in July 1988. Shrimps are yet to be harvested and, therefore, this program is not possible to evaluate at the moment. But from the experience of field visits, we may say that there may be better returns than the shrimp-carp polyculture.

Construction work of the Rajendrapur Hatchery project was completed in July 1988. However, test operation was started from March 1988. Up to August 1988, there was a net loss of Tk.73,328. This program does not merit evaluation before its full operation, which is expected to start this year.

Recommendation VIII.1. Further experiment on shrimp-carp polyculture may be continued with the existing ponds, and no new ponds should be taken up at the moment. REP should make a workable profile based on existing knowledge elsewhere available about this culture, and should concentrate on application of the knowledge in the existing ponds. This will help REP to avoid duplication of such research and thus will save REP resources.

Recommendation VIII.2. The programs on carp nursery and semi-intensive *telapia nilotika* monoculture may be extended to other areas, and workable project profiles may be prepared in order to hand over the programs to the RDP.

#### IX. Sericulture

The REP's sericulture program is not well documented. We have learned that 4 demonstration plots have been taken in Navaron (Jessore) and Atghoria (Pabna) for experimental 5 cycles per year cocoon production from bush mulberry cultivation. Cocoon production will start from April 1989.

In Boilor (Mymensingh), we have visited one mulberry sappling plot and have also seen road-side mulberry trees. Generally, mulberry leave, for cocoon rearing, is harvested from 3 or more-year old trees. Only the bush type of mulberry plantation allows one to harvest leaves after one year. In



Manikganj and Boiler, trees were affected by flood. Many trees died out while many others which are still alive are feeble.

Bush plantation in many of the BRAC areas may not be economically feasible. The Bangladesh Sericulture Board (BSB), for example, introduced bush plantation in Charghat (Natore). But, later it was competed out by sugarcane and paddy cultivations because of better returns in the latter. Currently, a land-saving device of mulberry cultivation, tree plantation, exists there. Same is the case with RDRS Thakurgaon area. This will have to be considered by REP before extending cocoon production.

The REP program on 5-cycle cocoon production per year may not be feasible. In the existing sericulture areas, a 5-cycle yearly production was tried, but yield in the fifth cycle was found to be very low. Leave shortages along with other technical problems are the deterrent.

Recommendation IX.1. The REP is advised to go through the book on Sericulture Industry in Bangladesh (Zaid Bakht et. al., forthcoming, BIDS, Dhaka; at present with BRAC printers) in order to understand possibilities of sericulture development in Bangladesh. This book will help REP to plan for sericulture program.

Recommendation IX.2. The REP should not be so enthusiastic at the outset to test on 5-cycle cocoon production. Initially it should target 3-4 cycles. If there is success and is possibility of extending it, then REP may experiment for 5-cycles.

Recommendation IX.3. Flood-prone areas should be avoided